

**PETITION FOR REVIVAL OF AN APPLICATION FOR PATENT  
ABANDONED UNINTENTIONALLY UNDER 37 CFR 1.137(b)**Docket Number (Optional)  
8114-008WO-USFirst named inventor: Adrian I. BotApplication No.: 10/527,931Art Unit: 1633Filed: August 26, 2005Examiner: WEHBE, ANNE MARIE SABRINATitle: Methods and compositions to generate and control the effector profile of t cells by simultaneous loading and activation of selected subsets of antigen presenting cell

Attention: Office of Petitions

**Mail Stop Petition**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

FAX (571) 273-8300

NOTE: If information or assistance is needed in completing this form, please contact Petitions Information at (571) 272-3282.

The above-identified application became abandoned for failure to file a timely and proper reply to a notice or action by the United States Patent and Trademark Office. The date of abandonment is the day after the expiration date of the period set for reply in the office notice or action plus any extensions of time actually obtained.

**APPLICANT HEREBY PETITIONS FOR REVIVAL OF THIS APPLICATION**

NOTE: A grantable petition requires the following items:

- (1) Petition fee;
- (2) Reply and/or issue fee;
- (3) Terminal disclaimer with disclaimer fee - required for all utility and plant applications filed before June 8, 1995; and for all design applications; and
- (4) Statement that the entire delay was unintentional

**1. Petition Fee**

- ☒ Small entity-fee \$ 810.00 (37 CFR 1.17(m)). Application claims small entity status. See 37 CFR 1.27.
- ☐ Other than small entity-fee \$ \_\_\_\_\_ (37 CFR 1.17(m))

**2. Reply and/or fee**

- A. The reply and/or fee to the above-noted Office action in the form of a response to the Office Action (identify type of reply):

- ☐ has been filed previously on \_\_\_\_\_.
- ☒ is enclosed herewith.

08/28/2009 CCHAU1 00000024 10527931

- B. The issue fee and publication fee (if applicable) of \$ 01 FC:2453

810.00 OP

- ☐ has been paid previously on \_\_\_\_\_.
- ☐ is enclosed herewith.

[Page 1 of 2]

This collection of information is required by 37 CFR 1.137(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

## 3. Terminal disclaimer with disclaimer fee

- ☒ Since this utility/plant application was filed on or after June 8, 1995, no terminal disclaimer is required.
- ☐ A terminal disclaimer (and disclaimer fee (37 CFR 1.20(d)) of \$ \_\_\_\_\_ for a small entity or \$ \_\_\_\_\_ for other than a small entity) disclaiming the required period of time is enclosed herewith (see PTO/SB/63).

4. STATEMENT: The entire delay in filing the required reply from the due date for the required reply until the filing of a grantable petition under 37 CFR 1.137(b) was unintentional. [NOTE: The United States Patent and Trademark Office may require additional information if there is a question as to whether either the abandonment or the delay in filing a petition under 37 CFR 1.137(b) was unintentional (MPEP 711.03(c), subsections (III)(C) and (D)).]

**WARNING:**

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

David Lewis  
Signature  
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Address  
San Jose, CA 95110  
Address

Aug 24, 2009  
Date  
33,101  
Registration Number, If applicable  
(408) 993-1800  
Telephone Number

- Enclosures:
- ☒ Fee Payment
  - ☒ Reply
  - ☐ Terminal Disclaimer Form
  - ☒ Additional sheets containing statements establishing unintentional delay
  - ☐ Other: \_\_\_\_\_

**CERTIFICATE OF MAILING OR TRANSMISSION [37 CFR 1.8(a)]**

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☐ Transmitted by facsimile on the date shown below to the United States Patent and Trademark Office at (571) 273-8300.

Aug 24, 2009  
Date

David Lewis  
Signature

David Lewis  
Typed or printed name of person signing certificate

**PETITION FOR REVIVAL OF AN APPLICATION FOR PATENT  
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**2. Reply and/or fee**

A. The reply and/or fee to the above-noted Office action in the form of a response to the Office Action (identify type of reply):

☐ has been filed previously on \_\_\_\_\_

☒ is enclosed herewith.

B. The issue fee and publication fee (if applicable) of \$ \_\_\_\_\_

☐ has been paid previously on \_\_\_\_\_

☐ is enclosed herewith.

[Page 1 of 2]

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Aug 24, 2009  
Date  
33,101  
Registration Number, If applicable  
(408) 993-1800  
Telephone Number

Enclosures:

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- ☒ Reply
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- ☐ Other: \_\_\_\_\_

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Aug 24, 2009  
Date

David Lewis  
Signature

David Lewis

Typed or printed name of person signing certificate



PTO/SB/21 (04-07)

Approved for use through 09/30/2007. OMB 0651-0031

U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

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<b>TRANSMITTAL FORM</b>  (to be used for all correspondence after initial filing)	Application Number	<b>10/527,931</b>	
	Filing Date	<b>August 26, 2005</b>	
	First Named Inventor	<b>Adrian I. Bot</b>	
	Art Unit	<b>1633</b>	
	Examiner Name	<b>WEHBE, ANNE MARIE SABRINA</b>	
Total Number of Pages in This Submission	<b>134</b>	Attorney Docket Number	<b>8114-008-WO-US</b>

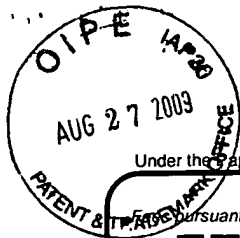
ENCLOSURES (Check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance Communication to TC
<input checked="" type="checkbox"/> Fee Attached	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input checked="" type="checkbox"/> Amendment/Reply	<input checked="" type="checkbox"/> Petition	<input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
<input type="checkbox"/> After Final	<input type="checkbox"/> Petition to Convert to a Provisional Application	<input type="checkbox"/> Proprietary Information
<input checked="" type="checkbox"/> Affidavits/declaration(s)	<input type="checkbox"/> Power of Attorney, Revocation	<input type="checkbox"/> Status Letter
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Change of Correspondence Address	<input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):
<input type="checkbox"/> Express Abandonment Request	<input type="checkbox"/> Terminal Disclaimer	Return Receipt Postcard, Check for \$914, Sequence Listing, and Petition to revive / explanation which includes: Exhibit I - Emails and Letters, Exhibit II - Affidavit of W. Gerald Newmin, Exhibit III - Affidavit of Martin Schroeder, Exhibit IV - Affidavit of David Lewis
<input type="checkbox"/> Information Disclosure Statement	<input type="checkbox"/> Request for Refund	
<input type="checkbox"/> Certified Copy of Priority Document(s)	<input checked="" type="checkbox"/> CD, Number of CD(s) <b>2</b>	
<input type="checkbox"/> Reply to Missing Parts/ Incomplete Application	<input type="checkbox"/> Landscape Table on CD	
<input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53	Remarks	
The Return Receipt Postcard, the check, and the exhibit cover sheets are not included in the total number of pages.		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT			
Firm Name	<b>David Lewis, Registered Patent Agent</b>		
Signature			
Printed name	<b>David Lewis</b>		
Date	<b>Aug 24, 2009</b>	Reg. No.	<b>33,101</b>

CERTIFICATE OF TRANSMISSION/MAILING			
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:			
Signature			
Typed or printed name	<b>David Lewis</b>	Date	<b>Aug 24, 2009</b>

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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PTO/SB/17 (10-08)

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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Effective on 12/08/2004.

Pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

**FEE TRANSMITTAL**  
**For FY 2009**☒ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 914

**Complete if Known**

Application Number	10/527,931
Filing Date	August 26, 2005
First Named Inventor	Adrian I. Bot
Examiner Name	WEHBE, ANNE MARIE SABRINA
Art Unit	1633
Attorney Docket No.	8114-008-WO-US

**METHOD OF PAYMENT (check all that apply)**☒ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): \_\_\_\_\_☒ Deposit Account Deposit Account Number: 503345 Deposit Account Name: \_\_\_\_\_

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☐ Charge fee(s) indicated below☐ Charge fee(s) indicated below, except for the filing fee☒ Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17☒ Credit any overpayments

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**FEE CALCULATION****1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	330	165	540	270	220	110	
Design	220	110	100	50	140	70	
Plant	220	110	330	165	170	85	
Reissue	330	165	540	270	650	325	
Provisional	220	110	0	0	0	0	

**2. EXCESS CLAIM FEES****Fee Description**

Each claim over 20 (including Reissues)

Fee (\$)

Small Entity Fee (\$)

52 26

Each independent claim over 3 (including Reissues)

220 110

Multiple dependent claims

390 195

Total Claims	Extra Claims	Fee (\$)	Fee Paid (\$)
40	- 20 or HP = 4	x 26 =	104

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims	Extra Claims	Fee (\$)	Fee Paid (\$)
3	- 3 or HP = 0	x 110 =	0

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims	Fee (\$)	Fee Paid (\$)

**3. APPLICATION SIZE FEE**

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$270 (\$135 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
	- 100 =	/ 50 =	(round up to a whole number) x	=

**4. OTHER FEE(S)**

Non-English Specification, \$130 fee (no small entity discount)

Fees Paid (\$)

Other (e.g., late filing surcharge): Petition Fee (\$810)

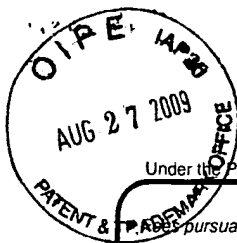
810

**SUBMITTED BY**

Signature		Registration No. 33,101 (Attorney/Agent)	Telephone (408) 993-1800
Name (Print/Type)	David Lewis	Date	Aug 24, 2009

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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**FEE TRANSMITTAL**  
**For FY 2009**

**Complete if Known**

Application Number	10/527,931
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Art Unit	1633
Attorney Docket No.	8114-008-WO-US

☒ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 914

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☒ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): \_\_\_\_\_

☒ Deposit Account Deposit Account Number: 503345 Deposit Account Name: \_\_\_\_\_

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

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Other (e.g., late filing surcharge): Petition Fee (\$810) 810

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Signature		Registration No. 33,101	Telephone (408) 993-1800
Name (Print/Type)	David Lewis	(Attorney/Agent)	Date Aug 24, 2009

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08/28/2009 LLANDGRA 00000010 10527931

104.00 DP

01 FC:2615



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and (2) deposited with the United  
States Post Office with sufficient  
postage for first class mail on or before  
the date of

August 24, 2009.

David Lewis  
David Lewis

Serial Number:

10/527,931

Filing Date:

August 26, 2005

First Named Inventor:

Adrian I. Bot

Art Unit:

1633

Confirmation Number:

7472

Docket Number:

8114-008-WO-US

Examiner:

WEHBE, ANNE  
MARIE SABRINA

Title:

Methods and  
compositions to  
generate and control  
the effector profile of  
t cells by  
simultaneous loading  
and activation of  
selected subsets of  
antigen presenting  
cells

Attention: Office of Petitions  
Mail Stop Petition  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

**Petition to Revive the Application and Explanation of Papers Attached**

The Applicants petition that the present application be revived.

Attached are (1) a check for \$914 which includes \$810 for the petition fee, (2) a  
response to the Office Action mailed January 28, 2008, and (3) Exhibits I-IV.

This application is currently abandoned due to inadvertently overlooking the  
deadline for responding to the Office Action of January 28, 2008. Below are an  
explanation of attached Exhibits I-IV, a summary of the events that led to the deadline for  
responding to the Office Action being overlooked, and an explanation of the inadvertent  
delay in filing this petition.

08/28/2009 CCHAUL 00000024 10527931

02-FC:2202

104:00-0P

CONFIDENTIAL  
SERIAL NUMBER: 10/527,931



### **Exhibit I**

Exhibit I is a collection of e-mails and letters evidencing that (1) the Applicants inadvertently overlooked the deadline to file a response to the Office Action and the need to file a petition to revive the application, and (2) that there was an ongoing effort to revive the application from the time that the Applicants became aware of the need to file a petition to revive the application until the filing of this petition. Regarding the letter of September 24, 2008 from Townsend & Townsend & Crew to Multicell Technologies, which is included in Exhibit I, the letter contains attorney client privileged information that is unrelated to current application, and the information that was unrelated to the current application was redacted.

### **Exhibit II**

Exhibit II is an affidavit from W. Gerald Newmin, the President and Chief Executive Officer of the Assignee, which evidences that (1) the failure to respond to the Office Action was inadvertent, (2) that the need to file a petition to revive the application was inadvertently overlooked by the Applicants, and (3) that there was an ongoing effort to revive the application from the time that the Applicants became aware of the need to file a petition to revive the application.

### **Exhibit III**

Exhibit III is an affidavit from the Applicants' Consultant for managing the Applicants' patent portfolio, which evidences that (1) the failure to respond to the Office Action was inadvertent, (2) that the need to file a petition to revive the application was inadvertently overlooked by the Applicants' Consultant, and (3) that there was an ongoing effort to revive the application from the time that the Applicants' Consultant became aware of the need to file a petition to revive the application.

### **Exhibit IV**

Exhibit IV is an affidavit from the Applicants' Representative for Docketing which evidences that there was an ongoing effort to revive the application from the time that the Applicants' Representative realized that the abandonment of the present application was unintentional, until the filing of this petition.

**Description of events leading to the unintentional abandonment and unintentional delay in filing this petition**

On February 6, 2008 and June 17, 2008 the Applicants received reminders from Catalyst Law Group, informing the Applicants that an Office Action was due for the current application.

However, in early July 2008, due to an accumulation of issues that are not important to this petition, Multicell Technologies Inc. began seeking a new law firm for handling its portfolio of approximately 100 patent applications, and the Applicants lost track of this application and forgot that the Office Action needed to be responded to. As an aside, but for proper context, of the approximately 100 patent applications, 21 were abandoned U.S. or foreign utility applications, 13 were expired P.C.T. applications, 7 were expired U.S. provisional patent applications, 23 were pending or granted U.S. utility patent applications, and 53 were pending or granted foreign patent applications (nearly all of the abandoned or expired applications are parents of pending applications, and consequently the manager of the patent portfolio needs to devote some time to the abandoned and expired patent applications in order to properly manage patent applications that descended from the abandoned and expired applications).

Later in July 2008, Multicell Technologies Inc. selected Townsend and Townsend and Crew as its new representatives, and began the process of transferring its portfolio of approximately 100 patent cases from Catalyst Law Group, APC to Townsend and

Townsend and Crew. Although during this period deadline for reply to the Office Action came due, the Applicants was not focused on this issue, and it was the Applicants' understanding that (1) information, instructions and deadlines for handling pending items related to its patent cases would be transferred from Catalyst Law Group, APC to Townsend and Townsend and Crew and (2) that one of the two law firms would take care of any matters that needed to be taken care of.

In the email from September 2, 2008, the Applicants' Consultant Martin Schroeder states "We have decided to allow 8114-008 to go abandoned ONLY in Canada. I do not recall seeing any rejections from any patent office," which evidences that he is not aware of receiving the rejection in the current application 8114-008US, which is the client's docket number for the current application, which in turn indicates that he is unaware that 8114-008US was abandoned, which (in combination with the affidavits of Martin Schroeder and W. Gerald Newmin) further evidences that the abandonment was unintentional.

Thus, following the transfer and as a result of the transfer of Multicell Technologies Inc.'s patent applications to Townsend and Townsend and Crew (and of the large number of cases) the Applicants were no longer aware of any deadlines for the current application, and did not know the current application had gone abandoned.

Although on September 24, 2008, the Applicants received a letter from Townsend and Townsend and Crew listing proposed strategies for several of Multicell Technologies Inc.'s U.S. and foreign applications, which mentioned docket numbers 8114-007, 8114-008, and 8114-009, and although this letter included the statement, "The U.S. application in this family (USSN 10/527,931) has been abandoned, whereas no examination report has been received in other jurisdictions," the Applicants were relying on Townsend, Townsend and Crew to take appropriate action and for calendaring and tracking

individual applications requiring special attention. The -009 and -007 patent families, mentioned in the letter, contain 11 applications and 10 applications respectively, and additionally, as mentioned above, Multicell's entire patent portfolio contains over 100 applications, which the Applicants were overseeing. The Applicants were not aware of many of the requirements necessary to revive this application, such as responding to an Office Action or other requirements.

As evidenced by the statements in the affidavits of Martin Schroeder and W. Gerald Newmin, the Applicants did not recall prior to receiving the September 24, 2008 letter that the current application was abandoned. As evidenced by the statements in the affidavits of Martin Schroeder and W. Gerald Newmin, the Applicants had intended to have the application revived, but were focused on other applications. Further, in the e-mail of June 17, 2009, Martin Schroeder states "Further Adrian's e-mail below and recommendation, let's allow 8114-011 to go abandoned on a worldwide basis and focus on 8114-008," which (in conjunction with the statements in the affidavits from Martin Schroeder and W. Gerald Newmin) further evidences that soon after September 24, 2008, Multicell had forgotten that the application was abandoned and needed to be revived. Additionally the e-mail from June 17, 2009 11:01 A.M. Martin Schroeder states that "It is my understanding that Townsend & Townsend revived 8114-008," which further evidences that Multicell had intended to revive this application and thought it had been revived. Townsend & Townsend and Crew had taken care of. Consequently, since the Applicants had not received further reminders from the prior law firm, taking the necessary steps to revive this application was overlooked, and the fact that it was abandoned was forgotten (as Multicell thought the application had been revived).

On February 4, 2009, Multicell Technologies Inc. hired David Lewis to handle the docketing of Multicell Technologies Inc.'s patent applications. As part of having

information about the Applicants' patent applications entered into docketing software, the statuses of the patent applications were noted and recorded by the Applicants' Representative for docketing David Lewis. It was the assumption of the Applicants' Representative for docketing that all cases labeled as abandoned in docket report prepared by the Applicants' prior firm, Townsend and Townsend and Crew, had been intentionally abandoned.

On June 17, 2009, as mentioned above, Multicell Technologies Inc.'s Consultant Martin Schroeder sent a correspondence to Multicell Technologies Inc.'s representative for docketing patent applications regarding making amendments to the claims of the current application, which was mentioned above.

Also on June 17, 2009, Multicell Technologies Inc.'s representative for docketing had a correspondence sent to inform Multicell Technologies Inc.'s Consultant Martin Schroeder that the current application was abandoned due to a failure to respond to an Office Action, and that a response to the Office Action would be required as part of reviving the application.

Multicell Technologies Inc.'s European patent attorney Richard Clegg, who was assigned to be Multicell's lead attorney for all of its applications worldwide, was preparing claims for the European counterpart to the current application, which the Applicants planned to adapt for use in the current application. Although Richard Clegg's claims were eventually significantly modified based on U.S. practice, Richard Clegg's claims were needed as a basis for the claims in the response to the Office Action necessary for preparing this petition.

Additionally, at that time, Multicell Technologies Inc. was in the process of obtaining a U.S. representative with a background in biotechnology, and did not have anyone for preparing a response to the Office Action in the current applicants, or

adapting the claims being prepared by the European patent attorney. Although David Lewis has a PhD in physics, David Lewis does not ordinarily handle the writing of Biotechnology patent applications or the responses to the Office Actions in Biotechnology patent applications.

Multicell Technologies Inc.'s Consultant Martin Schroeder forwarded e-mail correspondences between Multicell Technologies Inc. and its former attorneys to the Applicants' Representative for docketing, David Lewis.

On June 19, 2009, the Applicants continued efforts to obtain a U.S. biotech attorney or agent, and claims for the European counterpart to the current application were being prepared.

Also on June 19, 2009, David Lewis sent an Employee Agreement and Non Disclosure Agreement to Jennifer Haynes, a registered patent agent with a PhD in microbiology. Although Jennifer Haynes was contracted by David Lewis, Multicell Technologies had not yet agreed to have Jennifer Haynes work on Multicell applications.

June 20, 2009 and June 21, 2009 were a Saturday and a Sunday.

On June 22, 2009, Multicell Technologies Inc.'s Consultant Martin Schroeder forwarded additional e-mail correspondences between Multicell Technologies Inc. and its former attorneys to the Applicants' Representative for docketing, David Lewis. The Applicants continued efforts to obtain a U.S. attorney or agent with a background in biotechnology.

Also on June 22, 2009, claims for the European counterpart to the current application were being prepared.

On June 23, 2009, the Applicants continued efforts to obtain a U.S. attorney or agent with a background in biotechnology. The claims for the European counterpart to

the current application were being prepared by the Applicants' European patent attorney, and the Applicants received and approved of the prepared claims.

On June 24, 2009, Multicell interviewed Jennifer Haynes.

On June 25, 2009 and June 26, 2009, the Applicants continued efforts to obtain a U.S. attorney or agent with a background in biotechnology. The claims for the European counterpart to the current application were being prepared by the Applicants' European patent attorney, and the Applicants received and approved of the prepared claims.

On June 29, 2009, the Applicants' efforts to obtain a U.S. biotech attorney or agent for preparing a response to the Office Action continued. The claims for the European counterpart to the current application were filed in the European application, and the Applicants received a copy of the filed claims.

Thus, the Applicants' Representative David Lewis was waiting for a final version of the claims from June 17, 2009 to June 29, 2009, which were necessary for preparing the response to the Office Action, which is needed for preparing this petition.

Also on June 29, 2009, the Applicants' Representative David Lewis requested approval to begin work on the Petition to Revive and also requested approval for Jennifer Haynes to begin preparing the response to the Office Action in the current application.

Also on June 29, 2009, the Applicants' Consultant gave approval for preparing the Petition to revive the current application. The Applicants' Consultant Martin Schroeder approved of the request. However, there was a miscommunication and the source of the miscommunication is not clear to the Applicants' Representative, but may have been due, in part, to poor a mobile network connection at the Applicants' Consultant's mobile communications device.

On June 30, 2009 – July 2, 2009, the Applicants' Representative David Lewis, continued the review of correspondences between Multicell Technologies Inc. and its

former representatives for information related to the events that contributed to the unintentional abandonment of the current application.

July 3, 2009 and July 4, 2009 were holidays. July 5, 2009 was a Sunday.

On July 6, 2009, the Applicants' Representative began preparing this petition.

On July 7, 2009, the Applicants' Representative continued to work on preparing this petition.

On July 8, 2009, the Applicants' Representative continued to work on preparing this petition.

On July 9, 2009, the Applicants' Representative continued to work on preparing this petition.

On July 15, 2009, the Applicants' Representative David Lewis had a teleconference with the Applicants' Consultant during which the Petition to Revive the current application was discussed, and the incidents leading to the unintentional abandonment of the application were discussed. The Applicants' Representative again requested that approval be given to Jennifer Haynes to begin preparing the response to the Office Action for the current application. The Applicants' Consultant informed the Applicants' Representative David Lewis that approval for Jennifer Haynes to begin preparing the response to the Office Action for the current application had been given in the earlier teleconference on June 29, 2009. The Applicants' Representative David Lewis then realized that he had misunderstood the outcome of the earlier teleconference.

Also on July 15, 2009, the Applicants' Representative had the documents necessary for modifying the European claims and performing other work involved in preparing the response to the Office Action of the current application forwarded to Jennifer Haynes.



On July 16, 2009, Jennifer Haynes began reviewing and preparing documents necessary for filing the response to the Office Action.

July 18, 2009 and July 19, 2009 were Saturday and Sunday.

On July 17, 2009, Applicants' Representative David Lewis and Jennifer Haynes discussed the claims and strategy for responding to the Office Action, and Jennifer Haynes reviewed the claims of the European counterpart of the current application.

On July 20, 2009, Applicants' Representative David Lewis and Jennifer Haynes discussed the Office Action, claims and strategy for responding to the Office Action.

On July 21, 2009, Jennifer Haynes worked on preparing the response to the Office Action.

On July 22, 2009, Jennifer Haynes discussed the claims with the Applicants' Representative David Lewis, and revised the claims.

On July 23, 2009, Jennifer Haynes worked on preparing the response to the Office Action.

On July 24 2009, Jennifer Haynes worked on preparing the response to the Office Action.

July 25, 2009 and July 26, 2009 were Saturday and Sunday.

On July 27 2009, Jennifer Haynes worked on preparing the response to the Office Action.

On July 28 2009, Jennifer Haynes forwarded a draft of the Office Action to the Applicants' Representative David Lewis, for his review.

On July 29 2009, the Applicants' Representative David Lewis forwarded his comments regarding the response to the Office Action to Jennifer Haynes.

On July 30 2009, the Applicants' Representative David Lewis reviewed the revised draft of response to the Office Action and made modifications.

On July 31 2009 – August 10, 2009, Jennifer Haynes worked on preparing the response to the Office.

On August 11, 2009, a draft of the response to the Office Action was forwarded to the Applicants' lead patent attorney, Richard Clegg.

On August 12, 2009, the response to the Office Action was revised.

On August 13, 2009, the response to the Office Action was revised.

On August 14, 2009, a revised draft of the response to the Office Action was forwarded to the Applicants' lead patent attorney, Richard Clegg.

Thus, from June 29, 2009 to August 14, 2009 the response to the Office Action, which was necessary for filing this petition, was being prepared.

August 15, 2009 and August 16, 2009 were Saturday and Sunday.

On August 17, 2009, the Applicants' Representative David Lewis continued work on preparing this petition.

On August 18, 2009, the Applicants' Representative David Lewis continued work on preparing this petition.

On August 19, 2009, the Applicants' Representative David Lewis continued work on preparing this petition.

On August 20, 2009, the Applicants' Representative David Lewis continued work on preparing this petition.

On August 21, 2009, the Applicants' Representative David Lewis continued work on preparing this petition.

August 22, 2009 and August 23, 2009 were Saturday and Sunday.

On August 24, 2009, the Applicants' Representative David Lewis worked on and filed this petition.

**Summary of why the abandonment and the entire delay in filing this petition was unintentional**

Thus, to summarize, from June 17, 2009 from June 29, 2009, the Applicant's Representative was waiting to receive the final claims from the European counterpart of the present application, in addition to other activities that were occurring related to preparing this petition. Although a registered U.S. practitioner had been approved by Martin Schroeder on June 29, 2009, due to a miscommunication, David Lewis was not aware of the approval and had not assigned writing the response to the Office Action until July 15, 2009. Despite the miscommunication, other activities related to reviving the current application did occur between June 29, 2009 and July 15, 2009. From July 15, 2009 to August 14, 2009 the response to the Office Action, which was necessary for filing this petition, was being prepared, in addition to other activities that were occurring related to preparing this petition. From August 14, 2009 to August 20, 2009, this petition was being prepared. Thus from June 17, 2009 to August 20, 2009 the Applicants were diligently working on activities related to preparing this petition, and any delay in preparing the petition during that period was unintentional.

Whereas regarding prior to June 17, 2009, the abandonment was inadvertent due to Multicell being distracted with its other applications and a change in the law firms representing them, and Multicell was not aware of the abandonment until around September 24, 2009 when informed by Townsend & Townsend and Crew. However, Multicell was distracted with other matters, and assumed that Townsend & Townsend and Crew would take care of the necessary steps required to revive the application. Consequently Multicell inadvertently overlooked the reviving of the application, and Multicell did not discover that the application was still abandoned and had never been revived until June 17, 2009.

**Conclusion**

Thus, the entire delay in filing the petition to revive was inadvertent and the Applicants respectfully submit that it would be proper to grant the present petition, and the Applicants respectfully requests that the present application be revived.

Aug 24, 2009  
Date

Respectfully Submitted,

  
David Lewis

Registration Number 33,101  
1250 Aviation Avenue, Suite 200B  
San Jose, California 95110

# **EXHIBIT I**

E-mails and Letters



Kari Moyer-Henry, Ph.D.  
kmoyerhenry@catalystlaw.com  
(858) 200-0591

February 6, 2008

**Via E-mail: jnewmin@aol.com**

Jerry Newmin  
MultiCell Technologies, Inc.  
701 George Washington Highway  
Lincoln, RI 02865

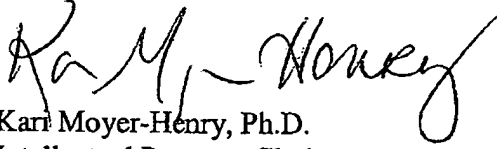
Re: U.S. Patent Application Serial No.: 10/527,931  
"METHODS AND COMPOSITIONS TO GENERATE AND CONTROL THE  
EFFECTOR PROFILE OF T CELLS BY SIMULTANEOUSLY LOADING  
AND ACTIVATION OF SELECTED SUBSETS OF ANTIGEN PRESENTING  
CELLS"  
Filed August 26, 2005  
Our File No. 8114-008-WO-US

Dear Mr. Newmin:

Enclosed please find a copy of an Office Action we received for the above referenced application. The deadline to file a response is **April 28, 2008**. Please review the examiner's comments and let us have your instructions for filing our response.

Please contact our office if you have any questions.

Very truly yours,  
CATALYST LAW GROUP, APC



Kari Moyer-Henry, Ph.D.  
Intellectual Property Clerk

kmh/DMK  
Enclosure  
Cc: M. Schroeder (via e-mail)

## Henderson R. Stansbury; Patent Firm of David Lewis

---

**From:** Martin Schroeder [martin\_schroeder@emmesgroup.com]  
**Sent:** Monday, June 22, 2009 1:54 PM  
**To:** Henderson Stansbury; David Lewis  
**Subject:** FW: Need instructions for following matters  
**Follow Up Flag:** Follow up  
**Flag Status:** Blue  
**Categories:** MULTICELL TECHNOLOGIES

-----Original Message-----

**From:** David Kohn [mailto:DKohn@catalystlaw.com]  
**Sent:** Tuesday, June 17, 2008 1:37 PM  
**To:** martin\_schroeder@emmesgroup.com; Jerry Newmin  
**Cc:** Lucille Gomes; Tom Jurgensen; Kari Moyer-Henry; Jazmine Lumanlan  
**Subject:** Need instructions for following matters

Jerry/Martin,

Per our reminder letters, we have yet to receive instructions for the following matters:

8114-007-WO-US (DNA case) – final deadline to respond is June 21, 2008 (3 extensions of time);  
8114-008-US (DNA case) – deadline to respond is June 28, 2008 (2 extensions of time; final deadline for response due July 28, 2008);  
8114-005-CON (IgG case) – shortened statutory period for response due June 30, 2008 (no extensions; final deadline for response due September 30, 2008)

Martin, I believe you guys are working on the response for the 8114-005-CON application, but I wanted to bring your attention to the first two. Please let me know, as these will require advance payments for the government costs associated with the response.

Regards,  
David

**David M. Kohn | Catalyst Law Group APC**  
9710 Scranton Rd., Suite 170 | San Diego, CA 92121  
t. 858.200.0586 | f. 858.450.9834 | c. 858.735.0843  
[dkohn@catalystlaw.com](mailto:dkohn@catalystlaw.com) | [www.catalystlaw.com](http://www.catalystlaw.com)

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**Henderson R. Stansbury; Patent Firm of David Lewis**

**From:** Martin Schroeder [martin\_schroeder@emmesgroup.com]  
**Sent:** Monday, June 22, 2009 1:59 PM  
**To:** Henderson Stansbury; David Lewis  
**Subject:** FW: Multicell 8114 Patent Families  
**Follow Up Flag:** Follow up  
**Flag Status:** Blue  
**Categories:** MULTICELL TECHNOLOGIES  
**Attachments:** RomeroEtAl\_10550722.pdf; 8114-009 USPTO Rejection.pdf; CD3 Antibody Therapy to Treat Type 1 Diabetes.pdf; hOKT3 MAb Type 1 Diabetes Columbia Kevan Herold.pdf; MultiCell Immunotherapeutics 06-236.pdf; MultiCell Immunotherapeutics Gantt Chart 06-236.doc1.pdf; Bot JOI 2006 IgTAA paper.pdf; Phillips Smith IgPeptide Delivery IRI 2005.pdf

-----Original Message-----

**From:** Martin Schroeder [mailto:martin\_schroeder@emmesgroup.com]  
**Sent:** Tuesday, September 02, 2008 6:58 PM  
**To:** cgao@townsend.com; Ken Weber  
**Cc:** Jerry Newmin; jnewmin@multicelltech.com; Lucille Gomes  
**Subject:** Multicell 8114 Patent Families

Ken, Chaun,

I have again reviewed the 8114-007, -008, -009, and -011 Multicell patent families, and have the following comments/questions/recommendations.

(1) 8114-007 Patent Family

This patent family originates from PCT application PCT/US03/07995. There are two pending corresponding US patent applications: US serial numbers 11/585,588 and 10/507,942. The US patent office rejected 10/507,942, and the European patent office rejected the EP equivalent to PCT/US03/07995. I have no information about the status of US patent application 11/585,588. Surprisingly, the Chinese patent granted the Chinese equivalent of PCT/US03/07995 with amended claims. This patent family relates to the use of non-coding RNA in conjunction with an antigen alone, or with an antigen contained in the CDR of an antibody to improve the immune response.

The two cited US patent applications seem to have exactly the same claims, so I am not sure why there are two apparently unique US patent applications covering the same invention. Can you clarify?

(2) 8114-008 Patent Family

This patent family originates from PCT/US03/30188. There is one pending corresponding US patent application serial number 10/527,931. This patent family relates to ways to generate an enhanced T-cell response in patients to an antigen wherein at least one epitope portion of the antigen is contained in the CDR of an antibody and administering the antibody-antigen construct in conjunction with dsRNA. The proposed claims appear to be limited to specific groups of peptide epitopes, and a molecular weight range of the dsRNA (10-50KD), and describes the up/down regulation of certain Interleukins and Interferons. The proposed claims also discuss the induction of an "effective memory response" to the administered peptide epitope and an enhanced Th1 and Th2 response.

We have decided to allow 8114-008 to go abandoned ONLY in Canada. I do not recall seeing any rejections from any patent office. I would appreciate it if you can determine the status of the US and EP equivalents of PCT/US03/30188, and let me know if there have been any rejection notices.

(3) 8114-009 Patent Family



This patent family originates from PCT/US04/09261. There is one pending US patent application serial number 10/550,722. This patent family relates to the use of dsRNA or ssRNA alone to cause apoptosis in proliferating cells. The claimed novelty seems to lie in the use of dsRNA (pA:pU) or ssRNA (pA), is less than 50KD in molecular weight, the proliferating cells are cancer cells, and that administration pA:pU or pA of less than 10KD causes enhanced alpha-TNF production. In case you are not aware, administering anything to a human that causes increased production of alpha-TNF can potentially be life threatening, so what is truly novel in my opinion is the finding that pA:pU or pA that is greater than 20KD still seems to cause apoptosis in cancer cells, enhanced T-1 immune response and IL-12 production, but DOES NOT cause the increased production of alpha-TNF. [See Locksley RM, Killeen N, Lenardo MJ, "The TNF and TNF receptor superfamilies: integrating mammalian biology", Cell 104 (4): 487-501 (2001).] This finding concerning not provoking an alpha-TNF response with pA:pU or pA that is greater than 20KD could be very important since many siRNA drugs currently in development I believe are all less than 10KD.

The USPTO rejected 10/550,722 (attached) for a number of reasons including the attached Romero et. al. reference. We need a game plan to figure out how to amend the claims if possible so that they will be allowed by the USPTO.

With respect to the 8114-007, -008, -009 patent families discussed above, I refer to David Kohn's emails of June 20, 2008 wherein David recommends: "...submit new claims or file continuation applications off of the -007 and -008 applications (given the breadth of their disclosures relative to the -009 application) and still receive the benefit of the Sept 2002 priority date". I do not know if David's recommendation is the appropriate course of action that Multicell should follow. Please evaluate David's recommendation, and let me know your recommendation if we should proceed according to David's recommendations with respect to the 8114-007, -008, and -009 patent families, or take a different approach. Feel free to contact David directly should you wish to discuss the matter with him.

#### (4) 8114-011 Patent Family

This patent family originates from PCT/US06/032512. There is no corresponding US patent application. I am not sure why. The international search report accompanying WO 2007/022477 A3 lists numerous references which are presented as prior art with the effect of negating the novelty of the proposed claims. The international search report was compiled on July 11, 2007. This PCT relates to a means to enhance antigen loading on the antigen presenting cell (APC) with the goal of enhancing the antigen's presentation on the MHC class 1 molecule to improve the desired T-cell response. This PCT specifically focuses on "tolerization" of a person to self-antigens such as would be the case in multiple sclerosis, type-1 diabetes and other such autoimmune diseases. The specific idea is to craft the self-antigen peptide sequence into the CDR of a therapeutic antibody, then administer the grafted therapeutic antibody construct to a patient suffering from the autoimmune disease. Multicell has data in mouse models for multiple sclerosis and type-1 diabetes showing that the disease phenotype is 100% ameliorated following administration of the corresponding self-antigen therapeutic antibody construct. Hence, the idea of "tolerization" to self-antigens. I have attached two references that show alternative therapeutic antibody approaches to treating type-1 diabetes, a couple of Multicell's own journal articles discussing their technology, and Multicell's grant applications with respect to the use of the claimed invention for the treatment of juvenile type-1 diabetes.

I look forward to hearing your detailed recommendations on how we should proceed in due course.

Thanks again for your help.

Martin

\*\*\*\*\*

Martin Schroeder  
EVP & Managing Director  
Direct: (415) 495-7111  
Mobile: (510) 816-3515  
FAX: (415) 495-3777

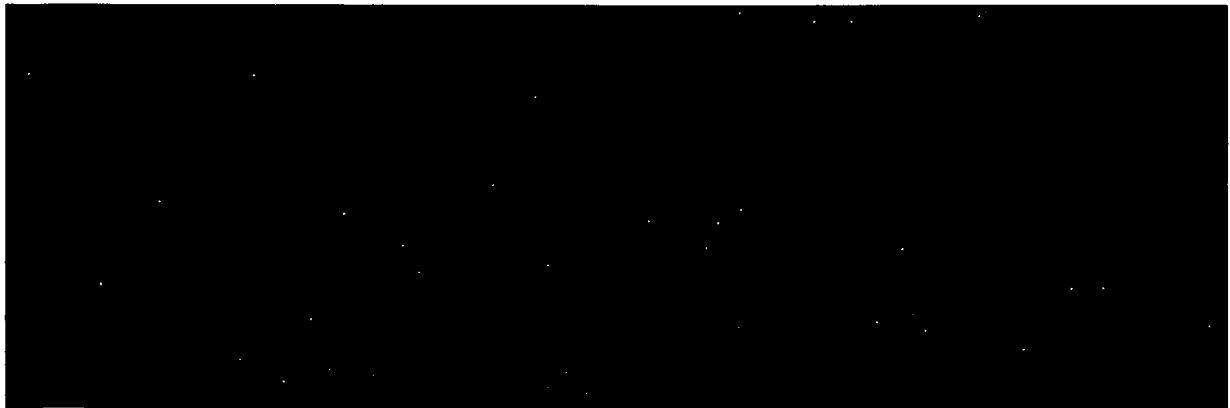
**CONFIDENTIAL      ATTORNEY-CLIENT PRIVILEGED**

September 24, 2008

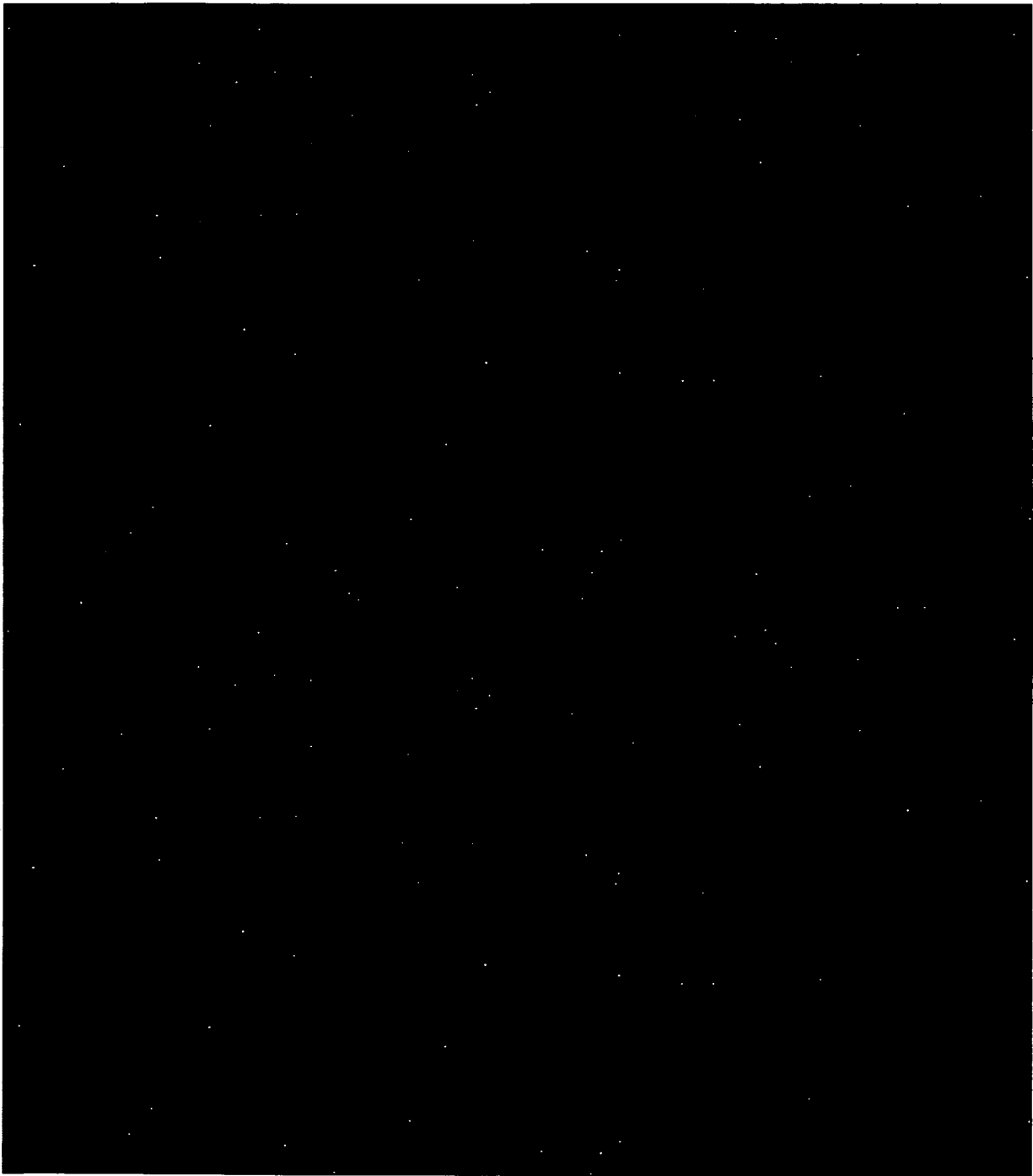
Jerry Newmin  
MultiCell Technologies, Inc.  
701 George Washington Highway  
Lincoln, RI 02865

RE:    Patent Prosecution Strategy  
      027607-000600 family (Multicell 8114-7 series)  
      027607-000700 family (Multicell 8114-8 series)  
      027607-000800 family (Multicell 8114-9 series)

Dear Mr. Newmin:



027607-000600 (8114-7):



CONFIDENTIAL

ATTORNEY-CLIENT PRIVILEGED



027607-000700 (8114-8):



A. If you intend to further confirm the patentability of these proposed claims, we can perform a patentability analysis at the minimum cost of about \$2,500 to \$5,000, depending on the state of the art. Please let us know if you wish to proceed with the patentability analysis.

CONFIDENTIAL

ATTORNEY-CLIENT PRIVILEGED

B. If you approve of the proposed new claims as outlined above, we will proceed to take necessary steps in the corresponding U.S. and foreign applications to replace the currently pending claims with these new claims. The U.S. application in this family (USSN 10/527,931) has been abandoned, whereas no examination report has been received in other jurisdictions. Assuming that the abandonment of the U.S. application was unintentional, we propose to petition for its revival as soon as possible so that the new claims can be submitted. The estimated cost for reviving this application is \$6,000. Likewise, we will submit the new claims upon receiving the first examination report in the foreign applications. Please let us know if you approve of filing of the proposed claims.

027607-000800 (8114-9):





**Henderson R. Stansbury; Patent Firm of David Lewis**

---

**From:** David Lewis [davidlewisnmn@yahoo.com]  
**Sent:** Monday, July 20, 2009 3:33 PM  
**To:** jennifer.a.haynes@comcast.net  
**Cc:** 'Henderson R. Stansbury; David Lewis Patent Firm'  
**Subject:** RE: 74-89 claims  
**Attachments:** 74-89 some proposed claims.doc

Dear Jennifer,

See my claim 1A. I am not sure if it makes sense (e.g., whether it is supported by the spec and whether it is a more detailed version of the method referenced in Richard Clegg's claims). If it makes sense, I think we should amend claim 1, as outlined in claim 1A. We should add claim 1B, and then add the rest of Richard's claims. However, it appears to me that Richard's claims need to be modified for US practice - we should discuss that over the phone.

The idea of claim 1A is just to give the Examiner something that builds on the previous claims. Claim 1B is a broader version of claim 1A. this claim I am hoping will link claim 1 to the composition/antigen claims that the rest of the claims will be amended to be (either by amending them or by inserting new ones).

In any event Martin is more interested in the composition of matter than the method, because he believes that he will get the best protection that way (which logically makes some sense, but if you have any thoughts about that, let me know). I nonetheless think it would be a good idea to have a couple of method claims mirroring the composition claims to round out their patent protection a bit (that should only cost them an extra \$220). I am not sure how to claim the antigen, because it seems that part of the invention may be the use of the antigen in combination with other compounds. In the mechanical world, I might claim a "kit," which is not always well received by the Examiners, but is sometimes the only way to claim certain inventions and in theory should work. Although I can think of analogies to kits that might work, perhaps there is a better (e.g. well established) way in the biotech world of claiming a multiple compounds that are used together (?we may want to also have claims for the mixture of the two compounds?). We should discuss this.

Please feel free to contact me regarding anything you would like to discuss.

Best regards,

David Lewis

Phone: 408-993-1800  
Fax: 408-993-1800

1250 Aviation Avenue, Suite 200B  
San Jose, California 95110

<http://www.davidlewispatentagent.com>

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8/20/2009

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**Henderson R. Stansbury; Patent Firm of David Lewis**

---

**From:** David Lewis [davidlewisnmn@yahoo.com]

**Sent:** Tuesday, July 21, 2009 10:40 AM

**To:** jennifer.a.haynes@comcast.net

**Subject:** Richard's claims

Dear Jennifer,

If you find any other claims that we should ask Richard about, please let me know. Note that the Europeans have "use" claims, which are expressly mentioned in the EPC rules, which are not quite our method of use (because typically the word "method" would not even appear in a "use" claims), and which I do not fully understand.

Thanks!

Please feel free to contact me regarding anything you would like to discuss.

Best regards,

David Lewis

Phone: 408-993-1800

Fax: 408-993-1800

1250 Aviation Avenue, Suite 200B  
San Jose, California 95110

<http://www.davidlewispatentagent.com>

To send a fax, just call 408-993-1800 at anytime. If you get my recorded message, just press start or send on your fax machine, and my answering service is supposed to automatically detect that there is an incoming fax and receive it. If for some reason this does not work, please let me know. Thanks!

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8/20/2009

## Henderson R. Stansbury; Patent Firm of David Lewis

---

**From:** Jennifer Haynes [jennifer.a.haynes@comcast.net]

**Sent:** Tuesday, July 21, 2009 11:30 AM

**To:** davidlewisnmn@yahoo.com

**Subject:** Re: Richard's claims

Hi David, yes, use claims are odd. I'm staying away from them. I do have some questions about the word "synthetic" before dsRNA. It looked like there was a lot of discussion with the EU associate about whether they should take that word out. I think your idea about the "kit" claims is a great idea. I hope he likes it too. I should have a first draft set of claims done by this afternoon...should I email it to you to review? Because the US does not allow those mixed agent/use claims that they did in the EU claim set, I ended up with quite a bit fewer claims. It also seemed like all of the claims in the PCT and EU included both the agent and the RNA, so I did not prepare an agent only claim. I will recheck this, though. Lastly, I have a couple of method claims (that are dependent on the kit and/or composition claims) and I am working on a dependent claim for these that discusses in vivo and ex vivo use. The original PCT claims had something like this. OK, let me know. Thanks, Jen

8/20/2009

## Henderson R. Stansbury; Patent Firm of David Lewis

---

**From:** David Lewis [davidlewisnmn@yahoo.com]

**Sent:** Tuesday, July 21, 2009 12:02 PM

**To:** 'Jennifer Haynes'

**Subject:** RE: Richard's claims

Dear Jennifer,

See my comments below.

Thanks!

Please feel free to contact me regarding anything you would like to discuss.

Best regards,

David Lewis

Phone: 408-993-1800

Fax: 408-993-1800

1250 Aviation Avenue, Suite 200B

San Jose, California 95110

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---

**From:** Jennifer Haynes [mailto:jennifer.a.haynes@comcast.net]

**Sent:** Tuesday, July 21, 2009 11:30 AM

**To:** davidlewisnmn@yahoo.com

**Subject:** Re: Richard's claims

Hi David, yes, use claims are odd. I'm staying away from them. I do have some questions about the word "synthetic" before dsRNA. It looked like there was a lot of discussion with the EU associate about whether they should take that word out. -

>>I assume there is support in the specification for the word "synthetic." Do we need it for patentability and what does it add? The word synthetic seems something like a product-by-process limitation.

I think your idea about the "kit" claims is a great idea. I hope he likes it too.

>> Probably, they don't use the word "kit" in the specification. I am wondering if, depending on how the specification is written, we should call it something else like a "medical product for administering a treatment" and then have a dependent claim that says that the agent and the

8/20/2009

dsRNA are in separate containers/vials, if supported by the specification.

I should have a first draft set of claims done by this afternoon...should I email it to you to review? -

>>That works

Because the US does not allow those mixed agent/use claims that they did in the EU claim set, I ended up with quite a bit fewer claims. It also seemed like all of the claims in the PCT and EU included both the agent and the RNA, so I did not prepare an agent only claim.

>>In mechanical/electrical US applications, from the point of view of 35 USC 112/132, I have yet to have troubles with adding a claim that is broader than any of the original claims. Have you had problems with doing that in Biotech cases?

>>It would seem that it might be worth a try. What do you think?

I will recheck this, though. Lastly, I have a couple of method claims (that are dependent on the kit and/or composition claims) and I am working on a dependent claim for these that discusses in vivo and ex vivo use.

>> in other words, you mean whether the agent and ds RNA are mixed ex vivo or administered together (and therefore not mixed until they are in vivo).

The original PCT claims had something like this.

>>If we can do this while more or less sticking to the language of the original application, that would be great!

OK, let me know. Thanks, Jen

----- Original Message -----

**From:** David Lewis

**To:** [jennifer.a.haynes@comcast.net](mailto:jennifer.a.haynes@comcast.net)

**Sent:** Tuesday, July 21, 2009 10:40 AM

**Subject:** Richard's claims

Dear Jennifer,

If you find any other claims that we should ask Richard about, please let me know. Note that the Europeans have "use" claims, which are expressly mentioned in the EPC rules, which are not quite our method of use (because typically the word "method" would not even appear in a "use" claims), and which I do not fully understand.

Thanks!

Please feel free to contact me regarding anything you would like to discuss.

Best regards,

David Lewis

Phone: 408-993-1800

Fax: 408-993-1800

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San Jose, California 95110

8/20/2009

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8/20/2009

## Henderson R. Stansbury; Patent Firm of David Lewis

---

**From:** Jennifer Haynes [jennifer.a.haynes@comcast.net]

**Sent:** Tuesday, July 21, 2009 3:38 PM

**To:** davidlewisnmn@yahoo.com

**Subject:** Re: Richard's claims

**Attachments:** NEW US CLAIMS.doc

Hi David, thanks for the comments, here is what I have so far...let's discuss this claims set and a possible broader claim when you have a chance. I looked at the sequence listing rejection and once I have the final listing that was submitted in the PCT case I can amend the figure legends to include the SEQ ID NOs (that way we won't have to amend the figures themselves - which simplifies things). But I won't know until I see it. I have also prepared a draft of the response which is awaiting our final claim draft. Call anytime, Jen

8/20/2009

## Henderson R. Stansbury; Patent Firm of David Lewis

---

**From:** David Lewis [davidlewisnmn@yahoo.com]

**Sent:** Tuesday, July 21, 2009 4:17 PM

**To:** 'Jennifer Haynes'

**Subject:** RE: Richard's claims

**Attachments:** NEW US CLAIMS v2.doc

Dear Jennifer,

I will call you soon.

Please feel free to contact me regarding anything you would like to discuss.

Best regards,

David Lewis

Phone: 408-993-1800

Fax: 408-993-1800

1250 Aviation Avenue, Suite 200B  
San Jose, California 95110

<http://www.davidlewispatentagent.com>

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**Henderson R. Stansbury; Patent Firm of David Lewis**

---

**From:** Jennifer Haynes [jennifer.a.haynes@comcast.net]

**Sent:** Wednesday, July 22, 2009 11:37 AM

**To:** davidlewisnmn@yahoo.com

**Cc:** jennifer.a.haynes@comcast.net

**Subject:** version 2 claims

**Attachments:** NEW US CLAIMSversion2.doc

Hi David, here is the next version. Let me know if I forgot anything. I will be out for a bit at noon, but should be available by about 2:30 if you want to talk about it. I added back your claim 1 with a couple of changes..see what you think....thanks, Jen

8/20/2009



## Henderson R. Stansbury; Patent Firm of David Lewis

---

**From:** David Lewis [davidlewisnmn@yahoo.com]

**Sent:** Wednesday, July 22, 2009 2:05 PM

**To:** 'Jennifer Haynes'

**Subject:** RE: version 2 claims

**Attachments:** 74-89 NEW US CLAIMS version4.doc

Dear Jennifer,

Most of the changes are fairly minor, see if you like amended claim 1. I removed the last two claims.

Please feel free to contact me regarding anything you would like to discuss.

Best regards,

David Lewis

Phone: 408-993-1800

Fax: 408-993-1800

1250 Aviation Avenue, Suite 200B

San Jose, California 95110

<http://www.davidlewispatentagent.com>

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8/20/2009

## Henderson R. Stansbury; Patent Firm of David Lewis

---

**From:** Jennifer Haynes [jennifer.a.haynes@comcast.net]  
**Sent:** Wednesday, July 22, 2009 4:29 PM  
**To:** davidlewisnmn@yahoo.com; Henderson R. Stansbury; David Lewis Patent Firm  
**Subject:** sequence listing

Hi David and Henderson,

I was just reviewing the sequence listing rejection in the OA and it is possible that we can fix it with some amendments to the specification (if the sequence listing that was submitted in the parent application has all of the sequences in it). Henderson, can you help me get a copy of the parent sequence listing? Then I can review it to make sure all of the sequences are there. Thanks, I really appreciate it! Jen

8/20/2009

## Henderson R. Stansbury; Patent Firm of David Lewis

---

**From:** Henderson R. Stansbury; David Lewis Patent Firm [henderson@davidlewispatentagent.com]  
**Sent:** Wednesday, July 22, 2009 4:43 PM  
**To:** jennifer.a.haynes@comcast.net  
**Cc:** davidlewisnmn@yahoo.com  
**Subject:** FW: sequence listing

No problem. David mentioned it earlier, but I didn't get a chance to check all the possible places I might find it. I'll keep looking.

---

**From:** Jennifer Haynes [mailto:jennifer.a.haynes@comcast.net]  
**Sent:** Wednesday, July 22, 2009 4:29 PM  
**To:** davidlewisnmn@yahoo.com; Henderson R. Stansbury; David Lewis Patent Firm  
**Subject:** sequence listing

Hi David and Henderson,

I was just reviewing the sequence listing rejection in the OA and it is possible that we can fix it with some amendments to the specification (if the sequence listing that was submitted in the parent application has all of the sequences in it). Henderson, can you help me get a copy of the parent sequence listing? Then I can review it to make sure all of the sequences are there. Thanks, I really appreciate it! Jen

**Henderson R. Stansbury; Patent Firm of David Lewis**

---

**From:** David Lewis [davidlewisnmn@yahoo.com]

**Sent:** Wednesday, July 22, 2009 7:12 PM

**To:** 'Jennifer Haynes'

**Subject:** RE: Claims

**Attachments:** 74-89 NEW US CLAIMS version6.doc

Dear Jennifer,

I had another thought. Usually, I file my applications with a method of use and a method of making, which seems to be in line with the reasons that Martin wanted the "use" claims - although he clearly never asked for a method of making. In any event I added one method of making claim - its the last claim. It does not say much more than we are making the product of claim 41. See if you like it.

Please feel free to contact me regarding anything you would like to discuss.

Best regards,

David Lewis

Phone: 408-993-1800

Fax: 408-993-1800

1250 Aviation Avenue, Suite 200B

San Jose, California 95110

<http://www.davidlewispatentagent.com>

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**Henderson R. Stansbury; Patent Firm of David Lewis**

---

**From:** Jennifer Haynes [jennifer.a.haynes@comcast.net]

**Sent:** Tuesday, July 28, 2009 1:27 PM

**To:** davidlewisnmn@yahoo.com

**Cc:** Henderson R. Stansbury; David Lewis Patent Firm

**Subject:** Re: EPO Sequence Listing

Hi David, 3 things:

1. SEQLIST - I think you are right. I think we need to get a text copy of the EP listing from the EP associate or the client if that is possible. Then we could change the application number to fit the US and submit that. Do you think that would be possible? It would save the client a lot of money rather than having us do it from scratch.

2. OA response - I have a draft of the response which I can send to you today or tomorrow. I'd love your thoughts on strategy, etc. But, it is not done - it is only a first draft. Would you rather I wait until it is more finalized?

3. References - I was able to get a copy of the two patents that are cited, but could not get the ref. Cella et al. (1999) J. Exp. Med. Vol 189 (5), 821-829. I would like to do a quick review. Do you guys have a way of getting these types of references? Also, I would love to see what the references D1 and D2 are for the EP case. Would you and Henderson be able to help me with either or both of these? Let me know.

Thanks for all of your help! Jen

**Henderson R. Stansbury; Patent Firm of David Lewis**

---

**From:** Henderson R. Stansbury; David Lewis Patent Firm [henderson@davidlewispatentagent.com]  
**Sent:** Tuesday, July 28, 2009 2:18 PM  
**To:** jennifer.a.haynes@comcast.net  
**Cc:** davidlewisnmn@yahoo.com  
**Subject:** Re: EPO Sequence Listing - References

Hi Jen,

Could you send me the identifying information for references D1 and D2, or a copy of the page that lists them? I can't quite find anything listed under those exact labels.

Please let me know if we can be of further assistance to you in any way.

Take care,

**HENDERSON R. STANSBURY**  
ADMIN ASSISTANT TO DAVID LEWIS Ph.D

---

**DAVID LEWIS PATENT FIRM**  
PHONE: (408) 993-1800 | FAX: (408) 993-1800  
1250 Aviation Avenue, Suite 200B  
San Jose, California 95110  
<http://www.davidlewispatentagent.com>

---

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8/20/2009

## Henderson R. Stansbury; Patent Firm of David Lewis

---

**From:** David Lewis [davidlewisnmn@yahoo.com]  
**Sent:** Tuesday, July 28, 2009 8:44 PM  
**To:** 'Jennifer Haynes'  
**Cc:** 'Henderson R. Stansbury; David Lewis Patent Firm'  
**Subject:** resp to OA  
**Attachments:** 74-89 resp to oa v2 7-21-09.doc; x-xx (BM-TEMPLATE) Response to Office Action.doc

Dear Jennifer,

Overall I like it, but see my comments. The passwords will be sent in a subsequent e-mail

I use the following naming convention, "docket# [applic,resp to OA, etc.] version\_number"  
Feel free to add whatever you want either before or after the version number. Always increment the version number after making any change so as not to get earlier and later version confused with one another.

I should have sent you my template for responses to Office Actions. As you have already written the response, don't worry too much about following it, but I would like to add the certificate of mailing to the front page. If there is anything else you like in it feel free to use it. Shouldn't we amend the specification to include the sequence listing? Or, is that not the way it is done?

The template that I am sending you is somewhat corrupted with actual data from another patent application. I will have Henderson send you a better version when he gets a chance to correct that. Most of the fields are supposed to get filled in automatically from our database.

Please feel free to contact me regarding anything you would like to discuss.

Best regards,

David Lewis

Phone: 408-993-1800  
Fax: 408-993-1800

1250 Aviation Avenue, Suite 200B  
San Jose, California 95110

<http://www.davidlewispatentagent.com>

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**Henderson R. Stansbury; Patent Firm of David Lewis**

---

**From:** Henderson R. Stansbury; David Lewis Patent Firm [henderson@davidlewispatentagent.com]  
**Sent:** Wednesday, July 29, 2009 10:19 AM  
**To:** jennifer.a.haynes@comcast.net  
**Cc:** davidlewisnmn@yahoo.com  
**Subject:** Re: EPO Sequence Listing

Dear Jen,

We plan on asking Richard for the text version. David is in a conference call and he will get back to you soon.

Please let me know if we can be of further assistance to you in any way.

Take care,

**HENDERSON R. STANSBURY**  
**ADMIN ASSISTANT TO DAVID LEWIS Ph.D**

---

**DAVID LEWIS PATENT FIRM**  
PHONE: (408) 993-1800 | FAX: (408) 993-1800  
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**Henderson R. Stansbury; Patent Firm of David Lewis**

---

**From:** Henderson R. Stansbury; David Lewis Patent Firm [henderson@davidlewispatentagent.com]  
**Sent:** Wednesday, July 29, 2009 11:53 AM  
**To:** jennifer.a.haynes@comcast.net  
**Cc:** davidlewisnmn@yahoo.com  
**Subject:** 8114-008EP References D1 and D2  
**Attachments:** D2-03797931\_EN8TOH9U8453472.pdf; D1-US5969109A.pdf

<<...>> <<...>>

Hi Jen,

Attached are the references you were looking for.

Please let me know if we can be of further assistance to you in any way.

Take care,

**HENDERSON R. STANSBURY**  
**ADMIN ASSISTANT TO DAVID LEWIS Ph.D**

---

**DAVID LEWIS PATENT FIRM**

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<http://www.davidlewispatentagent.com>

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## Henderson R. Stansbury; Patent Firm of David Lewis

---

**From:** David Lewis [davidlewisnmn@yahoo.com]  
**Sent:** Wednesday, July 29, 2009 12:22 PM  
**To:** 'Jennifer Haynes'  
**Subject:** RE: resp to OA - call me when it is convenient

Dear Jennifer,

I think my comment about claim 77 was erroneous. I must have misread what the Examiner wrote.

Please feel free to contact me regarding anything you would like to discuss.

Best regards,

David Lewis

Phone: 408-993-1800  
Fax: 408-993-1800

1250 Aviation Avenue, Suite 200B  
San Jose, California 95110

<http://www.davidlewispatentagent.com>

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8/20/2009

## Henderson R. Stansbury; Patent Firm of David Lewis

---

**From:** David Lewis [davidlewisnmn@yahoo.com]  
**Sent:** Wednesday, July 29, 2009 1:24 PM  
**To:** 'Jennifer Haynes'  
**Cc:** 'Henderson R. Stansbury; David Lewis Patent Firm'  
**Subject:** RE: newest draft  
**Attachments:** 74-89 resp to oa v4 7-21-09 (2).doc

Dear Jennifer,

I made a couple of more changes, see if you like them. Also, one of the headings in the response to the Office Action is "Notice to Comply," but I did not see a notice comply that was being replied to.

Please feel free to contact me regarding anything you would like to discuss.

Best regards,

David Lewis

Phone: 408-993-1800  
Fax: 408-993-1800

1250 Aviation Avenue, Suite 200B  
San Jose, California 95110

<http://www.davidlewispatentagent.com>

To send a fax, just call 408-993-1800 at anytime. If you get my recorded message, just press start or send on your fax machine, and my answering service is supposed to automatically detect that there is an incoming fax and receive it. If for some reason this does not work, please let me know. Thanks!

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8/20/2009

## Henderson R. Stansbury; Patent Firm of David Lewis

---

**From:** Henderson R. Stansbury; David Lewis Patent Firm [henderson@davidlewispatentagent.com]  
**Sent:** Friday, July 31, 2009 9:42 AM  
**To:** jennifer.a.haynes@comcast.net  
**Cc:** davidlewisnmn@yahoo.com  
**Subject:** Sequence Listing in text formats, and Cella reference update  
**Attachments:** Sequence listing.doc; Sequence listing.txt

<<...>> <<...>>

Hi Jen,

Attached are copies of the Sequence Listing in .doc and .txt formats (not that there is anything that needs to be done with them that we are aware of, just keeping you in the loop).

I left a message for the Examiner regarding the Cella reference, and if I don't hear back from her in a couple of hours I'll try calling her again to request a copy of the reference.

Have a good weekend.

Please let me know if we can be of further assistance to you in any way.

Take care,

**HENDERSON R. STANSBURY**  
ADMIN ASSISTANT TO DAVID LEWIS Ph.D

---

**DAVID LEWIS PATENT FIRM**  
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San Jose, California 95110  
<http://www.davidlewispatentagent.com>

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8/20/2009

## Henderson R. Stansbury; Patent Firm of David Lewis

---

**From:** David Lewis [davidlewisnmn@yahoo.com]  
**Sent:** Friday, July 31, 2009 11:22 AM  
**To:** 'Jennifer Haynes'  
**Subject:** RE: newest draft  
**Attachments:** article 821.pdf

Dear Jennifer,

Here is the article. I will wait for you to review it, before sending the draft of the response to the Office Action to Martin Schroeder and Richard Clegg.

Please feel free to contact me regarding anything you would like to discuss.

Best regards,

David Lewis

Phone: 408-993-1800  
Fax: 408-993-1800

1250 Aviation Avenue, Suite 200B  
San Jose, California 95110

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8/20/2009

## Henderson R. Stansbury; Patent Firm of David Lewis

---

**From:** David Lewis [davidlewisnmn@yahoo.com]  
**Sent:** Monday, August 03, 2009 5:13 PM  
**To:** adrian1bot@aol.com; jennifer.a.haynes@davidlewispatentagent.com  
**Cc:** martin\_schroeder@emmesgroup.com; 'Jerry Newmin'; 'Lucille Gomes'; 'Henderson R. Stansbury; David Lewis Patent Firm'  
**Subject:** MultiCell's ref. #8114-008US, Methods and compositions to generate and control the effector profile of T Cells by simultaneous loading and activation of selected subsets of antigen presenting cells  
**Attachments:** Cella et al.pdf

Dear Adrian,

I would like to introduce you to Jennifer, who is working with me on a response to an Office Action in the above application. Jennifer's email address is [jennifer.a.haynes@davidlewispatentagent.com](mailto:jennifer.a.haynes@davidlewispatentagent.com).

Jennifer would like to get you input regarding the above reference, which was not cited in the corresponding European patent application, but is being used in a rejection in the US application. If you would like a copy of application and/or claims, please let me know.

Please feel free to contact me regarding anything you would like to discuss.

Best regards,

David Lewis

Phone: 408-993-1800  
Fax: 408-993-1800

1250 Aviation Avenue, Suite 200B  
San Jose, California 95110

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8/20/2009

## Henderson R. Stansbury; Patent Firm of David Lewis

---

**From:** adrian1bot@aol.com  
**Sent:** Tuesday, August 04, 2009 11:10 AM  
**To:** davidlewisnmn@yahoo.com; jennifer.a.haynes@davidlewispatentagent.com  
**Cc:** martin\_schroeder@emmesgroup.com; jnewmin@aol.com; lgomes@multicelltech.com; henderson@davidlewispatentagent.com  
**Subject:** Re: MultiCell's ref. #8114-008US, Methods and compositions to generate and control the effector profile of T Cells by simultaneous loading and activation of selected subsets of antigen presenting cells

Dear David,

Thank you ! I am looking forward to working with Jennifer on this one. I appreciate a lot the latest version of claims.

Regards,

Adrian

8/20/2009

## Henderson R. Stansbury; Patent Firm of David Lewis

---

**From:** Martin Schroeder [martin\_schroeder@emmesgroup.com]  
**Sent:** Tuesday, August 04, 2009 1:00 PM  
**To:** davidlewisnmn@yahoo.com; adrian1bot@aol.com; jennifer.a.haynes@davidlewispatentagent.com  
**Cc:** 'Jerry Newmin'; 'Lucille Gomes'; 'Henderson R. Stansbury; David Lewis Patent Firm'  
**Subject:** RE: MultiCell's ref. #8114-008US, Methods and compositions to generate and control the effector profile of T Cells by simultaneous loading and activation of selected subsets of antigen presenting cells

Everyone,

I want to reinforce that Richard Clegg at Mewburn is the lead patent attorney for all Multicell patent cases. To that end, 8114-008US needs to comport to what Richard and Fran have already done on 8114-008EP. Please coordinate your efforts and include Richard in all of your discussions.

Thanks,

Martin

\*\*\*\*\*

Martin Schroeder  
EVP & Managing Director  
Emmes Group  
Tel: (415) 495-7111  
Mobile: (510) 816-3515  
FAX: (415) 495-3777

8/20/2009



## Henderson R. Stansbury; Patent Firm of David Lewis

---

**From:** David Lewis [davidlewisnmn@yahoo.com]  
**Sent:** Tuesday, August 04, 2009 2:05 PM  
**To:** martin\_schroeder@emmesgroup.com  
**Cc:** jennifer.a.haynes@davidlewispatentagent.com; 'Richard Clegg'; adrian1bot@aol.com  
**Subject:** RE: 8114-008 (74-89)

Dear Martin,

Since the next time that Adrian is available at 8:00 am is August 12, and since we need to minimize the delay in filing the petition to revive, would it be O.K., if Jennifer spoke to both Adrian and Richard, but separately, regarding Cella et al. (e.g., she would first speak to Adrian and then to Richard to get his input and to make sure that he is totally in agreement), so that we can finalize the response to the Office Action and petition earlier than August 12?

Thanks!

Please feel free to contact me regarding anything you would like to discuss.

Best regards,

David Lewis

Phone: 408-993-1800  
Fax: 408-993-1800

1250 Aviation Avenue, Suite 200B  
San Jose, California 95110

<http://www.davidlewispatentagent.com>

To send a fax, just call 408-993-1800 at anytime. If you get my recorded message, just press start or send on your fax machine, and my answering service is supposed to automatically detect that there is an incoming fax and receive it. If for some reason this does not work, please let me know. Thanks!

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8/20/2009

## Henderson R. Stansbury; Patent Firm of David Lewis

---

**From:** David Lewis [davidlewisnmn@yahoo.com]  
**Sent:** Tuesday, August 04, 2009 2:07 PM  
**To:** 'Jennifer Haynes'; jennifer.a.haynes@davidlewispatentagent.com  
**Subject:** RE: clarification: teleconferences and discussion with Adrian

Dear Jennifer,

I don't need to participate in any discussion that just involves you and Adrian. I would like to be in discussions that involve Richard, at least for now.

Please feel free to contact me regarding anything you would like to discuss.

Best regards,

David Lewis

Phone: 408-993-1800  
Fax: 408-993-1800

1250 Aviation Avenue, Suite 200B  
San Jose, California 95110

<http://www.davidlewispatentagent.com>

To send a fax, just call 408-993-1800 at anytime. If you get my recorded message, just press start or send on your fax machine, and my answering service is supposed to automatically detect that there is an incoming fax and receive it. If for some reason this does not work, please let me know. Thanks!

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8/20/2009

## Henderson R. Stansbury; Patent Firm of David Lewis

---

**From:** Martin Schroeder [martin\_schroeder@emmesgroup.com]  
**Sent:** Tuesday, August 04, 2009 2:08 PM  
**To:** davidlewisnmn@yahoo.com  
**Cc:** jennifer.a.haynes@davidlewispatentagent.com; 'Richard Clegg'; adrian1bot@aol.com  
**Subject:** RE: 8114-008 (74-89)

David,

Yes. It is OK. Just make sure that if you need to file claims to revive 8114-008, that those claims are consistent with the claims file with the EPO for 8114-008EP.

Martin

\*\*\*\*\*

Martin Schroeder  
EVP & Managing Director  
Emmes Group  
Tel: (415) 495-7111  
Mobile: (510) 816-3515  
FAX: (415) 495-3777

8/20/2009

## Henderson R. Stansbury; Patent Firm of David Lewis

---

**From:** David Lewis [davidlewisnmn@yahoo.com]  
**Sent:** Tuesday, August 04, 2009 2:23 PM  
**To:** martin\_schroeder@emmesgroup.com  
**Cc:** jennifer.a.haynes@davidlewispatentagent.com; 'Richard Clegg'; adrian1bot@aol.com  
**Subject:** RE: 8114-008 (74-89)

O.K. - David

Please feel free to contact me regarding anything you would like to discuss.

Best regards,

David Lewis

Phone: 408-993-1800  
Fax: 408-993-1800

1250 Aviation Avenue, Suite 200B  
San Jose, California 95110

<http://www.davidlewispatentagent.com>

To send a fax, just call 408-993-1800 at anytime. If you get my recorded message, just press start or send on your fax machine, and my answering service is supposed to automatically detect that there is an incoming fax and receive it. If for some reason this does not work, please let me know. Thanks!

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8/20/2009

# **EXHIBIT II**

Affidavit of W. Gerald Newmin

I certify that this correspondence was  
(1) placed in an envelope addressed to

Attention: Office of Petitions  
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P.O. Box 1450  
Alexandria, Virginia 22313-1450.

and (2) deposited with the United  
States Post Office with sufficient  
postage for first class mail on or before  
the date of

July Aug 24, 2009 2009.

David Lewis  
David Lewis

Serial Number: 10/527,931  
Confirmation Number: 7472  
Filing Date: August 26, 2005  
Examiner: WEHBE, ANNE  
MARIE SABRINA  
1633  
Art Unit:  
First Named Inventor: Adrian I. Bot  
Docket Number: 8114-008-WO-US  
Title: Methods and  
compositions to  
generate and control  
the effector profile of  
t cells by  
simultaneous loading  
and activation of  
selected subsets of  
antigen presenting  
cells

Attention: Office of Petitions  
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Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Affidavit of W. Gerald Newmin

I am W. Gerald Newmin, and I reside at

[ 3224-C SUNSET KEY APT 115

[ PUNTA GORDA, FL ] 33955

I am the President and Chief Executive Officer of Multicell Technologies Inc.,  
which is located at

68 Cumberland Street, Suite 301  
Woonsocket, RI 02895.

As President of Multicell Technologies Inc., I authorized the filing of the current application, which was filed on August 26, 2005.

I have essentially no training in prosecuting applications before the United States Patent and Trademark Office.

On February 6, 2008, I received a letter from Catalyst Law Group, APC informing me that an Office Action had been mailed by the U.S. Patent and Trademark for the current application.

On June 17, 2008, I received an e-mail from David Kohn at Catalyst Law Group, APC requesting instructions for the pending Office Action, and informing me that the deadline for responding to Office Action was July 28, 2008.

In early July 2008, due to an accumulation of issues that are not important to this petition, Multicell Technologies Inc. began seeking a new law firm for handling our portfolio of approximately 100 patent applications.

Later in July 2008, Multicell Technologies Inc. selected Townsend and Townsend and Crew as its new representatives, and began the process of transferring our portfolio of approximately 100 patent cases from Catalyst Law Group, APC to Townsend and Townsend and Crew. Although during this period deadline for reply to the Office Action came due, I was not focused on this issue, and it was my understanding that information, instructions and deadlines for handling pending items related to our patent cases would be transferred from Catalyst Law Group, APC to Townsend and Townsend and Crew and that one of the two law firms would take care of any matters that needed to be taken care of.

Any failure to meet deadlines and requirements for this application during the period of time when Multicell Technologies Inc.'s patent applications were being transferred between firms was unintentional. Following the transfer of Multicell Technologies Inc.'s patent applications to Townsend and Townsend and Crew I was no longer aware of any deadlines for the current application, and I did not know the current application had gone abandoned.

On September 24, 2008, I received a letter from Townsend and Townsend and Crew listing proposed strategies for several of Multicell Technologies Inc.'s U.S. and foreign applications, which mentioned docket numbers 8114-007, 8114-008, and 8114-009. Although this letter included the statement, "The U.S. application in this family (USSN 10/527,931) has been abandoned, whereas no examination report has been received in other jurisdictions," I was relying on Townsend, Townsend and Crew to take appropriate action and for calendaring and tracking individual applications requiring special attention. The -009 and -007 patent families, mentioned in the letter, contain 11 applications and 10 applications respectively, and additionally Multicell's entire patent portfolio contains over 100 applications, which I was overseeing. I was not aware of the requirement to respond to an Office Action or what other requirements would need to be met to revive the application, and I did not know prior to receiving this letter that the current application was abandoned. I had intended to have the application revived, but this application was not the primary focus of my attention. Consequently, since I did not get any further reminders, seeing to it that this application was revived was overlooked, and the fact that it was abandoned was forgotten.



On February 4, 2009, Multicell Technologies Inc. hired David Lewis to handle the docketing of Multicell Technologies Inc.'s patent applications.

On June 16, 2009, Multicell Technologies Inc.'s Consultant Martin Schroeder copied me on a correspondence with Multicell Technologies Inc.'s representative for docketing patent applications regarding an amendment to the claims of the current application.

On June 17, 2009, Multicell Technologies Inc.'s representative for docketing copied me on a correspondence informing Multicell Technologies Inc.'s Consultant Martin Schroeder that the current application was abandoned due to a failure to respond to an Office Action, and that a response to the Office Action would be required as part of reviving the application.

Multicell Technologies Inc.'s European patent attorney was preparing claims for the European counterpart to the current application, which we planned to adapt for use in the current application. However, Multicell Technologies Inc. was in the process of obtaining a U.S. representative with a background in biotech at that time, and did not have anyone capable of preparing a response to the Office Action, and adapting the claims being prepared by the European patent attorney.

Multicell Technologies Inc.'s Consultant Martin Schroeder forwarded e-mail correspondences between Multicell Technologies Inc. and its former attorneys to the Applicant's Representative for docketing, David Lewis.

On June 19, 2009, we continued efforts to obtain a U.S. biotech attorney or agent, and claims for the European counterpart to the current application were being prepared.

June 20, 2009 and June 21, 2009 were a Saturday and a Sunday.

On June 22, 2009, Multicell Technologies Inc.'s Consultant [Martin Schroeder] forwarded e-mail correspondences between Multicell Technologies Inc. and its former attorneys to the Applicant's Representative for docketing, David Lewis. We continued efforts to obtain a U.S. biotech attorney or agent, and claims for the European counterpart to the current application were being prepared.

On June 23, 2009 – June 26, 2009, we continued efforts to obtain a U.S. biotech attorney or agent. The claims for the European counterpart to the current application were being prepared by the Applicant's European patent attorney, and I received and approved of the prepared claims.

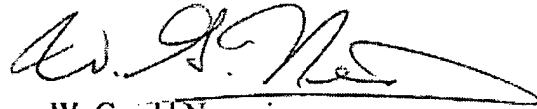
On June 29, 2009, we continued efforts to obtain a U.S. biotech attorney or agent for preparing a response to the Office Action continued.

The claims for the European counterpart to the current application were filed in the European application, and I received a copy of the filed claims.

Any delay in filing the petition to revive the current application resulting from me was completely unintentional.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read 'W. Gerald Newmin', written over a horizontal line.

W. Gerald Newmin  
President & Chief Executive Officer  
Multicell Technologies, Inc.

8/4/09

Date

# **EXHIBIT III**

Affidavit of Applicants' Consultant Martin  
Schroeder

I certify that this correspondence was  
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P.O. Box 1450  
Alexandria, Virginia 22313-1450,

and (2) deposited with the United  
States Post Office with sufficient  
postage for first class mail on or before  
the date of

*Aug 24, 2009*  
July \_\_\_\_\_, 2009.

*David Lewis*  
\_\_\_\_\_  
David Lewis

Serial Number:  
Confirmation Number:  
Filing Date:  
Examiner:  
  
Art Unit:  
First Named Inventor:  
Docket Number:  
Title:

10/527,931  
7472  
August 26, 2005  
WEHBE, ANNE  
MARIE SABRINA  
1633  
Adrian I. Bot  
8114-008-WO-US  
Methods and  
compositions to  
generate and control  
the effector profile of  
t cells by  
simultaneous loading  
and activation of  
selected subsets of  
antigen presenting  
cells

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P.O. Box 1450  
Alexandria, Virginia 22313-1450

**Affidavit of Martin Schroeder**

I am Martin Schroeder, and I reside at:

92 Natoma Street, Suite 200  
San Francisco, CA 94105

I am a consultant to Multicell Technologies Inc., which is located at

68 Cumberland Street, Suite 301  
Woonsocket, RI 02895.

As a consultant Multicell Technologies Inc., I provide assistance in making  
decisions relevant to the management of Multicell Technologies Inc.'s patent portfolio.

I have essentially no training in prosecuting applications before the United States Patent and Trademark Office.

On February 6, 2008, I received a letter from Catalyst Law Group, APC informing me that an Office Action had been mailed by the U.S. Patent and Trademark for the current application.

On June 17, 2008, I received an e-mail from David Kohn at Catalyst Law Group, APC requesting instructions for the pending Office Action, and informing me that the deadline for responding to Office Action was July 28, 2008.

In early July 2008, Multicell Technologies Inc. began seeking new representatives for handling our portfolio of approximately 100 patent applications.

Later in July 2008, Multicell Technologies Inc. selected Townsend and Townsend and Crew as its new representatives, and began the process of transferring our portfolio of approximately 100 patent cases from Catalyst Law Group, APC to Townsend and Townsend and Crew. Although during this period, the response to the Office action was due, it was my understanding that information, instructions and deadlines for handling pending items related to our patent cases would be transferred from Catalyst Law Group, APC to Townsend and Townsend and Crew. Since I did not receive any reminders and since this application was not the focus of my attention, responding to the Office Action was inadvertently overlooked.

Any failure to meet deadlines and requirements for this application during the period of time when Multicell Technologies Inc.'s patent applications were being transferred between firms was unintentional. Following the transfer of Multicell Technologies Inc.'s patent applications to Townsend and Townsend and Crew I was no

longer aware of any deadlines for the current application, and I did not know the current application was abandoned.

On September 2, 2008, I sent an e-mail to Townsend and Townsend and Crew related to patent prosecution strategies for several applications, including the present application. I informed Townsend and Townsend and Crew that I did not recall seeing any rejection from the U.S. Patent and Trademark Office in the current application and that only the Canadian variant of the current application should be allowed to go abandoned. I was not aware of the requirement to respond to an Office Action, and I did not know the current application was abandoned.

On September 24, 2008, I received a letter from Townsend and Townsend and Crew listing proposed strategies for several of Multicell Technologies Inc.'s U.S. and foreign applications, which mentioned docket numbers 8114-007, 8114-008, and 8114-009. Although this letter included the statement, "The U.S. application in this family (USSN 10/527,931) has been abandoned, whereas no examination report has been received in other jurisdictions," I was relying on Townsend, Townsend and Crew to take appropriate action and for calendaring and tracking individual applications requiring special attention. The -009 and -007 patent families, mentioned in the letter, contain 11 applications and 10 applications respectively, and additionally Multicell's entire patent portfolio contains over 100 applications, which I was overseeing. Since I did not receive any further reminders and since this application was not the focus of my attention, reviving the application was inadvertently overlooked. Any failure on my part to provide instructions necessary for taking required actions for the current application was unintentional. The fact that the application was abandoned was forgotten.

On February 4, 2009, Multicell Technologies Inc. hired David Lewis to handle the docketing of Multicell Technologies Inc.'s patent applications.

On June 16, 2009, I corresponded with Multicell Technologies Inc.'s representative for docketing patent applications regarding an amendment to the claims of the current application.

On June 17, 2009, Multicell Technologies Inc.'s representative for docketing informed me that the current application was abandoned due to a failure to respond to an Office Action, and that a response to the Office Action would be required as part of reviving the application.

Multicell Technologies Inc.'s European patent attorney was preparing claims for the European counterpart to the current application, which we planned to adapt for use in the current application. However, Multicell Technologies Inc. was in the process of obtaining a U.S. representative with a background in biotech at that time, and did not have anyone capable of preparing a response to the Office Action, and adapting the claims being prepared by the European patent attorney.

I forwarded e-mail correspondences between Multicell Technologies Inc. and its former attorneys to the Applicant's Representative, David Lewis, who handles docketing.

On June 19, 2009, we continued efforts to obtain a U.S. biotech attorney or agent, and claims for the European counterpart to the current application were being prepared.

On June 22, 2009, I forwarded e-mail correspondences between Multicell Technologies Inc. and its former attorneys to the Applicant's Representative for docketing, David Lewis. We continued efforts to obtain a U.S. biotech attorney or agent, and claims for the European counterpart to the current application were being prepared.



On June 23, 2009, we continued efforts to obtain a U.S. biotech attorney or agent. The claims for the European counterpart to the current application were being prepared by the Applicant's European patent attorney.

On June 24, 2009, I interviewed Jennifer Haynes as part of ongoing efforts to obtain a U.S. representative for preparing responses to the Office Actions in U.S. patent applications, including this application.

June 25 – June 26, 2009, we continued efforts to obtain a U.S. biotech attorney or agent. The claims for the European counterpart to the current application were being prepared by the Applicant's European patent attorney, and I received and approved of the prepared claims.

On June 29, 2009, we continued efforts to obtain a U.S. biotech attorney or agent for preparing a response to the Office Action continued.

The claims for the European counterpart to the current application were filed in the European application, and I received a copy of the filed claims.

The Applicant's Representative, David Lewis, requested approval to begin work on the Petition to Revive and also requested approval for Jennifer Haynes to begin preparing the response to the Office Action in the current application.

I gave approval to begin work on the Petition to Revive the application and the response to the Office Action.

On June 30, 2009 – July 2, 2009, we continued efforts to obtain a U.S. biotech attorney or agent.

On July 15, 2009, I had a teleconference the Applicant's Representative, David Lewis, during which the Petition to Revive the current application was discussed. The

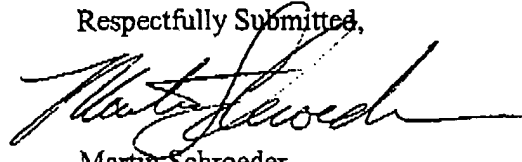
Applicant's Representative again requested that approval be given to Jennifer Haynes to begin preparing the response to the Office Action for the current application. I informed the Applicant's Representative, David Lewis that approval for Jennifer Haynes to begin preparing the response to the Office Action for the current application had been given in an earlier teleconference.

Any delay in filing the petition to revive the current application resulting from me was completely unintentional.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

7/29/2009  
Date

Respectfully Submitted,



Martin Schroeder

# **EXHIBIT IV**

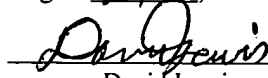
Affidavit of Applicants' Representative  
David Lewis

I certify that this correspondence was  
(1) placed in an envelope addressed to

Attention: Office of Petitions  
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Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450,

and (2) deposited with the United  
States Post Office with sufficient  
postage for first class mail on or before  
the date of

August 24, 2009.

  
David Lewis

Serial Number:	10/527,931
Confirmation Number:	7472
Filing Date:	August 26, 2005
Examiner:	WEHBE, ANNE MARIE SABRINA
Art Unit:	1633
First Named Inventor:	Adrian I. Bot
Docket Number:	8114-008-WO-US
Title:	Methods and compositions to generate and control the effector profile of t cells by simultaneous loading and activation of selected subsets of antigen presenting cells

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P.O. Box 1450  
Alexandria, Virginia 22313-1450

#### **Affidavit of David Lewis**

I am a registered patent agent with a PhD in physics and I have not filed responses to rejections or written patent applications for inventors in the field of biotechnology.

On February 4, 2009, I was hired by Multicell Technologies Inc. to handle the Docketing of the Applicants' patent applications. I was forwarded a docket report prepared by Townsend and Townsend and Crew containing information about the applicants' patent applications. As part of entering information about the Applicants' patent applications into our docketing software, the statuses of the patent applications were noted and recorded. It was my understanding that all cases labeled as abandoned in

docket report prepared by the Applicants' prior firm, Townsend and Townsend and Crew, had been intentionally abandoned.

On June 16, 2009, I received an e-mail from the Applicants' Consultant for managing the Applicants' patent portfolio, Martin Schroeder. The Applicants' Consultant's e-mail stating that the Applicants were planning to amend the claims of the current application.

On June 17, 2009, as part of my standard procedure, I reviewed basic information about the current application, including the status of the current application, before making comments or a recommendation on proceeding. While reviewing the case information, I noticed that the current application was abandoned.

Also on June 17, 2009, I discussed the abandonment of the application with the Applicants' Consultant, and the Applicants' Consultant was unaware that the application had gone abandoned. I explained to the Applicants' Consultant that the application went abandoned due to a failure to respond to an Office Action, and that a response to the Office Action would be required as part of reviving the application.

Also on June 17, 2009, the Applicants' Consultant informed me via e-mail that the Applicants' European patent attorney was preparing claims for the European counterpart to the current application, which the Applicants planned to adapt for use in the current application.

Also on June 17, 2009, the Applicants' Consultant forwarded me e-mail correspondences between Multicell Technologies Inc. and its former attorneys, and I reviewed the correspondences.

June 20, 2009 and June 21, 2009 were a Saturday and a Sunday.

On June 22, 2009, I received an e-mail from the Applicants' Consultant which contained copies of e-mail correspondences between Multicell Technologies Inc. and its former attorneys, and I reviewed the correspondences.

On June 23, 2009, the Applicants' efforts to obtain a U.S. representative for preparing a response to the Office Action continued. The claims for the European counterpart to the current application were being prepared by the Applicants' European patent attorney.

On June 24, 2009, I participated in an interview, in which the Applicants' Consultant interviewed Jennifer Haynes, a registered patent agent.

June 25 – June 26, 2009, the Applicants' efforts to obtain a U.S. representative for preparing a response to the Office Action continued. The claims for the European counterpart to the current application were being prepared by the Applicants' European patent attorney, and the claims were sent to the Applicants and the Applicants' Consultant for review and approval.

June 27, 2009 and June 28, 2009 were a Saturday and a Sunday.

On June 29, 2009, the Applicants' Representative, David Lewis, requested approval to begin work on the Petition to Revive and also requested approval for Jennifer Haynes to begin preparing the response to the Office Action in the current application.

Also on June 29, 2009, the Applicants' Consultant gave approval for preparing the Petition to revive the current application, but it was not clear to the Applicants' Representative, David Lewis that approval had been given for Jennifer Haynes to begin work on the response to the Office Action. The miscommunication regarding approval for Jennifer Haynes to begin working on the response to the Office Action may have been

due, in part, to poor a mobile network connection at the Applicants' Consultant's mobile communications device.

On June 30, 2009 – July 2, 2009, I continued the review of correspondences between Multicell Technologies Inc. and its former representatives for information related to the events that contributed to the unintentional abandonment of the current application. The Applicants' efforts to obtain a U.S. representative for preparing a response to the Office Action continued.

July 3, 2009 and July 4, 2009 were holidays. July 5, 2009 was a Sunday.

On July 6, 2009, I began preparing this petition.

On July 7, 2009, I continued to work on preparing this petition.

On July 8, 2009, I continued to work on preparing this petition.

On July 9, 2009, I continued to work on preparing this petition.

On July 15, 2009, the Applicants' Representative David Lewis had a teleconference with the Applicants' Consultant during which the Petition to Revive the current application was discussed. The Applicants' Representative again requested that approval be given to Jennifer Haynes to begin preparing the response to the Office Action for the current application. The Applicants' Consultant informed the Applicants' Representative David Lewis that approval had been given in an earlier teleconference for Jennifer Haynes to begin preparing the response to the Office Action for the current application, and the Applicants' Representative David Lewis then realized that he had misunderstood the outcome of the earlier teleconference.

Also on July 15, 2009, The Applicants' Representative David Lewis had the documents necessary for modifying the European claims and performing other work



involved in preparing the response to the Office Action of the current application forwarded to Jennifer Haynes.

On July 16, 2009, Jennifer Haynes began reviewing and preparing documents necessary for filing the response to the Office Action.

July 18, 2009 and July 19, 2009 were Saturday and Sunday.

On July 17, 2009, I discussed the claims and strategy for responding to the Office Action with Jennifer Haynes.

On July 20, 2009, I discussed the claims and strategy for responding to the Office Action with Jennifer Haynes.

On July 22, 2009, I discussed the claims with Jennifer Haynes.

On July 23, 2009, Jennifer Haynes worked on preparing the response to the Office Action.

On July 24 2009, Jennifer Haynes worked on preparing the response to the Office Action.

July 25, 2009 and July 26, 2009 were Saturday and Sunday.

On July 27, 2009, Jennifer Haynes worked on preparing the response to the Office Action.

On July 28 2009, I received a draft of the Office Action from Jennifer Haynes, and I began reviewing the draft.

On July 29 2009, I forwarded my comments regarding the response to the Office Action to Jennifer Haynes.

On July 30 2009, I reviewed the revised draft of response to the Office Action and made modifications.

On July 31 2009, I worked on revising the response to the Office Action.

August 1, 2009 and August 2, 2009 were Saturday and Sunday.

On August 11, 2009, I forwarded a draft of the response to the Office Action to the Applicants' lead patent attorney, Richard Clegg.

On August 12, 2009, I received the revised draft the response to the Office Action from Jennifer Haynes.

On August 13, 2009, I revised the draft of the response to the Office Action.

On August 14, 2009, I forwarded a draft of the response to the Office Action to the Applicants' lead patent attorney, Richard Clegg.

August 15, 2009 and August 16, 2009 were Saturday and Sunday.

On August 17, 2009, I continued work on preparing this petition.

On August 18, 2009, I continued work on preparing this petition.

On August 19, 2009, I continued work on and filed this petition. On August 21, 2009, the Applicants' Representative David Lewis continued work on preparing this petition.

August 22, 2009 and August 23, 2009 were Saturday and Sunday.

On August 24, 2009, the Applicants' Representative David Lewis worked on and filed this petition.

Any delay in filing the petition to revive the current application resulting from me was completely unintentional.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Aug 24, 2009  
Date

Respectfully Submitted,

  
David Lewis

Registration Number 33,101  
1250 Aviation Avenue, Suite 200B  
San Jose, California 95110

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

I certify that this correspondence was (1)  
placed in an envelope addressed to

Attention: Office of Petitions  
Mail Stop Petition  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450,

and (2) deposited with the United States  
Post Office with sufficient postage for first  
class mail on or before the date of

August 24, 2009.



David Lewis

Confirmation No. 7472

Examiner: Wehbe, Anne Marie Sabrina

Art Unit: 1633

In re application of: Bot, Adrian, et al.

Application No.: 10/527,931

Filed: August 26, 2005

For: METHODS AND COMPOSITIONS TO  
GENERATE AND CONTROL THE  
EFFECTOR PROFILE OF T CELLS BY  
SIMULTANEOUS LOADING AND  
ACTIVATION OF SELECTED SUBSETS OF  
ANTIGEN PRESENTING CELLS

AMENDMENT

Attention: Office of Petitions  
Mail Stop Petition  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Sir:

In response to the Office Action mailed January 28, 2008, please enter the  
following amendments and remarks:

**Amendments to the Claims** are reflected in the listing of claims which begins on page 2  
of this paper.

**Amendments to the Specification** begin on page 7 of the paper.

**Amendments to the Sequence Listing** begin on page 12 of the paper.

**Remarks/Arguments** begin on page 13 of this paper.

### **Amendments to the Claims:**

Please replace the prior set of claims with the claims below, which are redlined to show the changes to the claims.

### **Listing of Claims:**

1. (CURRENTLY AMENDED) A method of generating an enhanced T cell response, with the product of claim 41, in a patient to an the antigen, the method comprising: administering to the patient an immunoglobulin or portion thereof wherein said immunoglobulin or portion thereof has at least one peptide epitope of said antigen attached to said immunoglobulin or portion thereof; and administering said immunoglobulin or portion thereof in conjunction with ~~a the dsRNA~~ double stranded RNA ~~segment~~ to said patient in an amount sufficient to generate a Tc1 response in the patient to the antigen; wherein the agent is the IgG having the at least one T cell epitope of the antigen covalently attached within the CDR region of the IgG without modification of the Fc portion.

### **Cancel Claims 2-36**

37. (NEW) A composition comprising: an agent including at least an IgG having at least one T cell epitope of an antigen covalently attached within the CDR region of the IgG without modification of the Fc portion; and double-stranded RNA.
38. (NEW) The composition of claim 37, wherein the double-stranded RNA is pA:pU.
39. (NEW) The composition of claim 37, wherein the double-stranded RNA is pI:pC.
40. (NEW) The composition according to claim 37 wherein the agent and double-stranded RNA are provided in an amount sufficient to generate a Tc1 response in a patient.

41. (NEW) A product for administering a treatment for virus immunization, viral infection or tumor, comprising: an agent including at least an IgG having at least one T cell epitope of an antigen covalently attached within the CDR region of the IgG without modification of the Fc portion; and

double-stranded RNA; wherein the agent and the double-stranded RNA are provided in an amount sufficient to generate a Tc1 response in a patient.

42. (NEW) The product of claim 41, wherein the double-stranded RNA is pA:pU.

43. (NEW) The product of claim 41, wherein the double-stranded RNA is pI:pC.

44. (NEW) The product of claim 41, wherein the double-stranded RNA is pA:pU and is provided in an amount sufficient to induce MHC class I-restricted Tc1 cells thereby producing IFN- $\gamma$ .

45. (NEW) The product of claim 41, wherein the double-stranded RNA has a molecular weight of between 10 - 50 Kd.

46. (NEW) The product of claim 41, wherein the double-stranded RNA are between 100 - 2000 base pairs in length.

47. (NEW) The product of claim 41, wherein the immunoglobulin backbone of the IgG is derived from human IgG, or is a humanized IgG.

48. (NEW) The product of claim 41, wherein the patient is human.

49. (NEW) The product of claim 41, wherein the antigen is a virus.

50. (NEW) The product of claim 49, wherein the virus is influenza virus.

51. (NEW) The product of claim 41, wherein the T cell epitope is selected from: influenza virus M1 or M2; hepatitis C virus NS3; hepatitis B virus core antigen; human papilloma virus HPV 18-E7, HPV 16 - E7, HPV 18 E6, HPV 16 E6; HIV-1: reverse transcriptase; HIV-1: gag; herpes simplex antigens; and respiratory syncytial virus antigens.

52. (NEW) The product of claim 41, wherein the T-cell epitope is a tumor associated T cell epitope.

53. (NEW) The product of claim 41, wherein the T cell epitope is selected from: melanoma-gp100; MART-1; TRP-2; carcinoembryonic antigen precursor; Her-2; prostate

tumor antigens; carcinoembryonic antigen precursor XP064845/NCB1; prostate tumor antigens; MUC 1; and mucin 1.

54. (NEW) The product of claim 41, wherein the agent and double-stranded RNA are admixed together.

55. (NEW) The product of claim 41, wherein the agent and double-stranded RNA are provided separately to be administered separately.

56. (NEW) The composition of claim 37, wherein the double-stranded RNA is pA:pU and is provided in an amount sufficient to induce MHC class I-restricted Tc1 cells thereby producing IFN- $\gamma$ .

57. (NEW) The composition of claim 37, wherein the double-stranded RNA has a molecular weight of between 10 - 50 Kd.

58. (NEW) The composition of claim 37, wherein the double-stranded RNA are between 100 - 2000 base pairs in length.

59. (NEW) The composition of claim 37, wherein the immunoglobulin backbone of the IgG is derived from human IgG, or is a humanized IgG.

60. (NEW) The composition of claim 37, wherein the patient is human.

61. (NEW) The composition of claim 37, wherein the antigen is a virus.

62. (NEW) The composition of claim 61, wherein the virus is influenza virus.

63. (NEW) The composition of claim 37, wherein the T cell epitope is selected from: influenza virus M1 or M2; hepatitis C virus NS3; hepatitis B virus core antigen; human papilloma virus HPV 18-E7, HPV 16 - E7, HPV 18 E6, HPV 16 E6; HIV-1: reverse transcriptase; HIV-1: gag; herpes simplex antigens; and respiratory syncytial virus antigens.

64. (NEW) The composition of claim 37, wherein the T-cell epitope is a tumor associated T cell epitope.

65. (NEW) The composition of claim 37, wherein the T cell epitope is selected from : melanoma-gp100; MART-1; TRP-2; carcinoembryonic antigen precursor; Her-2; prostate tumor antigens; carcinoembryonic antigen precursor XP064845/NCB1; prostate tumor antigens; MUC 1; and mucin 1.

66. (NEW) A viral vaccine comprising a composition according to claim 37.

67. (NEW) A viral vaccine comprising a product according to claim 41.

68. (NEW) A method of virus immunization comprising:  
administering the product of claim 41 to a patient in need of virus immunization.
69. (NEW) A method of treatment of viral infection comprising:  
administering the product of claim 41 to a patient in an amount sufficient to treat the viral infection.
70. (NEW) A method for treatment of tumor comprising:  
administering the product of claim 41 to a patient in need of tumor treatment.
71. (NEW) A method of generating an enhanced T cell response in a patient to an antigen, comprising:  
  
administering the composition of claim 37 to a patient in an amount sufficient to generate a Tc1 response in the patient to an antigen.
72. (NEW) A method of generating an enhanced T cell response in a patient using the product of claim 41, comprising:  
  
administering the agent to a patient in conjunction with double-stranded RNA, in an amount sufficient to generate a Tc1 response in the patient to an antigen.
73. (NEW) The method of claim 72, wherein the agent and the double-stranded RNA are administered together.
74. (NEW) The method of claim 72, wherein the agent and the double-stranded RNA are administered separately.
75. (NEW) The method of claim 72, wherein the agent and double-stranded RNA are administered *in vivo*.
76. (NEW) A method of producing the product of claim 41, comprising:  
producing the agent with at least the IgG having at least one T cell epitope of the antigen covalently attached within the CDR region of the IgG without modification of the Fc portion;  
and



producing the double-stranded RNA; wherein the agent and the double-stranded RNA are provided in an amount sufficient to generate a Tc1 response in a patient.

## **AMENDMENTS TO THE SPECIFICATION**

**Please insert the following at line 11:**

INCORPORATION BY REFERENCE OF THE SEQUENCE LISTINGS ON  
COMPACT DISC

This application hereby incorporates by reference two identical files, each entitled "Sequence-Listing.txt," each of the two files is stored on a different one of two identical compact discs, both files were created on August 21, 2009, and both files have the size of 86,924 bytes.

**Please replace the paragraph starting on page 18 line 20 and ending at line 21 of the Brief Description of the Drawings, with the following paragraph:**

--Fig. 1D shows the sequence of the constant region of the heavy chain as well as schematic depiction of a prospective construct. The construct contains the Human IgG1 backbone Leader and Flanking sequence (Seq. I.D. No. 48), the glycine polylinker (Seq. I.D. No. 49), the Hinge region of human recombinant Ig (Seq. I.D. No. 3), the human IgG1 backbone CH2 region of human recombinant Ig (Seq. I.D. No. 2), and the human IgG1 backbone CH3 region of human recombinant Ig (Seq. I.D. No. 1). The combination sequence containing the Hinge, CH2 and CH3 regions is provided in Seq. I.D. No. 7; --

**Please replace the paragraph starting on page 18 line 22 and ending at line 26 of the Brief Description of the Drawings, with the following paragraph:**

--Fig. 1E - 1M show the sequences of various antigens and epitopes discussed in the present application and which can be inserted into an immunoglobulin [sequences can be accessed on the internet at ncbi.nlm.nih.gov (add the proper address prefix: <http://www.>) by searching the "proteins" section by use of the provided accession number. The content of this database is hereby incorporated by reference in its entirety.] In Figure 1F, The sequence of Influenza virus M2 is provided (PN0087/NCBI) (Seq. I.D. No. 12). In Figure 1H, For the Melanoma gp100 sequence (P40967/NCBI), substitute epitopes for agonists correspond to fldqvafsv (Seq. I.D. No. 1), fldqrvfvv (Seq. I.D. No. 2), and flflwffev (Seq. I.D. No. 3). In Figure 1H, alternate TRP-2 epitopes (CAA0437/NCI) are provided including llpggrpyr (Seq. I.D. No. 4) and lsvydffvw (Seq. I.D. No. 5). Figure 1L includes the following additional antigens: Prostate associated PAGE-1 (Homo sapiens) AAC25990/NCI (Seq. I.D. No. 34), Six

transmembrane epithelial antigen of the prostate (Homo sapiens) ACCESSION NP\_036581/NCI (Seq. I.D. No. 35), G antigen, family C, 1; JM27 protein; prostate-associated gene protein 4 (Homo sapiens) - ACCESSION NP\_008934 (Seq. I.D. No. 36), Mucin 1, transmembrane; (Homo sapiens) - ACCESSION NP\_002447 (Seq. I.D. No. 37). Figure 1M includes the following additional antigens: Major surface glycoprotein G (Attachment glycoprotein G) of O. RSV - ACCESSION Q86695 (Seq. I.D. No. 38), Attachment glycoprotein (Human respiratory syncytial virus) - ACCESSION AAM82069 (Seq. I.D. No. 39), Glycoprotein G (Human herpes virus 1) - ACCESSION AAN04791 (Seq. I.D. No. 40), Immediate early protein ICP47 (human herpesvirus 1) - ACCESSION AAG33134 (Seq. I.D. No. 41), and Neurovirulence factor (ICP 34.5) (Human herpesvirus 2) - ACCESSION BAA23428 (Seq. I.D. No. 42);--

**Please replace the paragraph starting on page 35, line 32 and ending on page 36, line 13, with the following paragraph:**

--Figure 4(A) shows the detrimental effect of serum on the presentation of a T cell epitope peptide: M12 B cell lymphoma APC were incubated with TcH in the presence of various amounts of SFERFEIFPKE (HA) peptide (SEQ ID NO:5) in serum-free HL-1 medium ("HA+HL-1") or HL-1 medium supplemented with 20% mouse serum from BALB/c *scid* mice ("HA+serum"). The number of cells incubated was  $2 \times 10^4$  M12 and  $1 \times 10^4$  TcH/100 $\mu$ l of HL-1 medium supplemented or not with serum. The next day the plate was centrifuged for 15min/4<sup>0</sup>C/1500RPM, then the supernatant was flicked, the cells were fixed with cold freshly made fixing solution (2% Formaldehyde, 0.2% Glutaraldehyde in 1X PBS) and the plate was again centrifuged for 3 min/4<sup>0</sup>C/1500RPM. Fixing solution was flicked off the plate, cells washed once with PBS 200  $\mu$ l/well, centrifuging the plate for 3min/4<sup>0</sup>C/1500RPM. PBS was flicked off the plate and cells were incubated overnight at 37<sup>0</sup>C with 200 $\mu$ l/well of the X-gal substrate freshly prepared as follows: 200 $\mu$ l of the X-gal stock solution, (40 mg/ml in DMSO) in 10ml of substrate buffer (5mM Potassium Ferrocyanide, 5mM Potassium Ferricyanide, 2mM MgCl<sub>2</sub> in 1X PBS). The blue activated TcH were scored visually using the microscope--

**Please replace the paragraph starting on page 37, line 16 and ending on page 38, line 8, with the following paragraph:**

--As shown in Figure 5A, *ex vivo* formation of MHC-peptide complexes on antigen presenting cells (APCs) from spleen was measured as follows: splenic APC were isolated by magnetic sorting using anti-MHC II antibodies. Separation by using magnetic beads coupled with anti-MHC II was carried out using magnetic cell separators and reagents from Miltenyi Biotec, Germany as follow: spleens were processed to single cell suspension, red blood cells lysed, then cells washed, counted and resuspended in MACS buffer (PBS supplemented with 2 mM EDTA and 0.5% BSA). Magnetically labeled cells were passed through a separation column which is placed in the magnetic field of a MACS separator. The magnetically labeled positive fraction is retained in the column while the negative fraction runs through. After removal of the column from the magnetic field, the magnetically retained positive cells are eluted from the column, cells are washed, counted, resuspended in HL1 complete media and they were incubated with specific T cell hybridoma recognizing I-E<sup>d</sup>+ SFERFEIFPKE (SEQ ID NO:5) overnight, in the presence of various amounts of SFERFEIFPKE ("HA") peptide (SEQ ID NO:5) or recHA(I-Ed)-IgG ("IgHA"). Per well,  $2 \times 10^4$  APC were incubated with  $1 \times 10^4$  TcH. Next day the plate was centrifuged for 15min/4<sup>0</sup>C/1500RPM, then the supernatant was flicked, the cells were fixed with cold freshly made fixing solution (2% Formaldehyde, 0.2% Glutaraldehyde in 1X PBS) and the plate was again centrifuged for 3min/4<sup>0</sup>C/1500RPM. Fixing solution was flicked off the plate, cells washed once with PBS 200  $\mu$ l/well, centrifuging the plate for 3min/4<sup>0</sup>C/1500RPM. PBS was flicked off the plate and cells were incubated overnight at 37<sup>0</sup>C with 200 $\mu$ l/well of the X-gal substrate freshly prepared as follows: 200 $\mu$ l of the X-gal stock solution, (40 mg/ml in DMSO) in 10ml of substrate buffer (5mM Potassium Ferrocyanide, 5mM Potassium Ferricyanide, 2mM MgCl<sub>2</sub> in 1X PBS). The blue activated TcH were scored visually using the microscope. The number of activated TcH was quantified and the results expressed as activation versus molar amount of epitope.--

**Please replace the paragraph starting on page 39, line 17 and ending on page 39, line 29, with the following paragraph:**

--(B) PBMC were used as APC with SFERFEIFPKE (HA)-specific TcH (SEQ ID NO:5), in the presence of cognate peptide or recHA (I-Ed)-IgG. The cells were co-incubated for 24 hours ( $2 \times 10^4$  APC +  $1 \times 10^4$  TcH). The next day the plate was centrifuged for 15min/ $4^\circ\text{C}$ /1500RPM, then the supernatant was flicked, the cells were fixed with cold freshly made fixing solution (2% Formaldehyde, 0.2% Glutaraldehyde in 1X PBS) and the plate was again centrifuged for 3min/ $4^\circ\text{C}$ /1500RPM. Fixing solution was flicked off the plate, cells washed once with PBS 200  $\mu\text{l}$ /well, centrifuging the plate for 3min/ $4^\circ\text{C}$ /1500RPM. PBS was flicked off the plate and cells were incubated overnight at  $37^\circ\text{C}$  with 200 $\mu\text{l}$ /well of the X-gal substrate freshly prepared as follows: 200 $\mu\text{l}$  of the X-gal stock solution, (40 mg/ml in DMSO) in 10ml of substrate buffer (5mM Potassium Ferrocyanide, 5mM Potassium Ferricyanide, 2mM  $\text{MgCl}_2$  in 1X PBS). The blue activated TcH were scored visually using the microscope. The results are expressed as number of activated TcH /well, at different molar concentrations of epitope--

**Please replace the paragraph starting on page 40, line 13 and ending on page 40, line 33, with the following paragraph:**

--Assessment of *in vivo* formation of MHC-peptide complexes and a comparison with peptide in saline or standard oil-in-water emulsion were carried out in I-Ed<sup>+</sup> BALB/c mice. BALB/c mice were treated with recHA (I-Ed)-IgG, peptide in saline or peptide emulsified in incomplete Freund's adjuvant (IFA), by subcutaneous and intraperitoneal injection (doses depicted in Figure 7B). At 24 hours, the local (mesenteric) lymphoid nodes (LN), spleen and thymus were harvested, single cell suspensions were made, red blood cells lysed from the spleens, LN and thymus were collagenase digested. All cells were washed, counted and incubated with TcH recognizing I-ED+ SFERFEIFPKE (MHC class II-HA) (SEQ ID NO:5), complexes. The number of TcH was  $1 \times 10^4$ /well. The formation of such MHC-peptide complexes was evaluated by titrating the number of APC with constant number of TcH and measuring TcH activation after overnight incubation. The next day the plate was centrifuged for

15min/4<sup>0</sup>C/1500RPM, then the supernatant was flicked, the cells were fixed with cold freshly made fixing solution (2% Formaldehyde, 0.2% Glutaraldehyde in 1X PBS) and the plate was again centrifuged for 3min/4<sup>0</sup>C/1500RPM. Fixing solution was flicked off the plate, cells washed once with PBS 200 µl/well, centrifuging the plate for 3min/4<sup>0</sup>C/1500RPM. PBS was flicked off the plate and cells were incubated overnight at 37<sup>0</sup>C with 200µl/well of the X-gal substrate freshly prepared as follows: 200µl of the X-gal stock solution, (40 mg/ml in DMSO) in 10ml of substrate buffer (5mM Potassium Ferrocyanide, 5mM Potassium Ferricyanide, 2mM MgCl<sub>2</sub> in 1X PBS). The blue activated TcH were scored visually using the microscope--

**Please replace the paragraph starting on page 56, line 9 and ending on page 56, line 20, with the following paragraph:**

--Activated SFERFEIFPKE-specific T cells (SEQ ID NO:5) were separated from BALB/c mice immunized 2 weeks previously with 100µg peptide in CFA. They were incubated with mitomycin treated splenocytes in the presence of various amounts of recHA(I-Ed)-IgG or corresponding peptide. The expansion and cytokine production (IFN-γ, IL-4, IL-2) was estimated by ELISPOT analysis as follows: the ELISPOT plates (Millipore, Molsheim, France) were incubated with purified anti-cytokine Abs (4µg/ml for anti-IL2 and anti-IL4, and 8 µg/ml for anti-IFN gamma, from BD Pharmingen) in sterile PBS (50 µg/well) at 4<sup>0</sup>C overnight. The next day, the plates were washed 2 times with DMEM media and blocked with 200µl/well of DMEM complete containing FBS, for an hour, at 37<sup>0</sup>C. Single cell suspension was made from the spleens, red blood cells were lysed, cells washed, counted and incubated at 5 x 10<sup>5</sup>/well together with 20 µg/ml HA 110-120 peptide or just with media, to assess the background.--

### **AMENDMENTS TO THE SEQUENCE LISTING**

Please insert the attached sequence listing, having pages numbered pages 1-35, into the specification after the abstract.

## **REMARKS/ARGUMENTS**

### **Status of Claims**

The specification has been amended to include specific sequence identifiers. Claim 1 has been amended to depend upon newly added claim 41 and to recite that the method is for inducing a Tc1 response in a patient. Claims 2-36 are cancelled. Claims 37-76 are added.

### **Support for New Claims**

Support for new claims 37-76 can be found in the specification and claims as filed. For example, support for the recitation that the immunoglobulin is an IgG can be found at least at pages 27-32, support for the at least one T cell epitope can be found at least at pages 8, line 19; page 9, line 9; page 28, line 13; and original claims 1 and 10. Support for “covalently attached” can be found at least at page 3, line 1; and page 5, line 1. Support for “to the CDR region can be found at least at page 5, lines 8 and 9; and original claim 6, support for “modification of the Fc portion can be found at least at page 3, line 1; and page 5, lines 5 and 6. Support for the language “generates a Tc1 response in a patient” can be found at least at page 3, line 19. Support for the methods of treatment involving “virus immunization” or “treatment of tumor” can be found at least at pages 75, lines 26-28; and page 76, lines 11-14 using the claimed composition to vaccinate against infection challenge with a prototype virus; paragraphs 42-48 on pages 8 and 9 (virus immunization); examples 38-44, and paragraphs 49-58 on pages 9-10 (tumor treatment) using the claimed composition to treat tumors. As such, no new matter has been added herewith. As a result of the amendment claims 1 and 37-76 are presented for further examination.

### **Nucleotide and/or Amino Acid Sequences**

In response to the Notice to Comply (box 7), Applicants have included specific sequence identifiers for Figures 1D, 1F, 1H, 1L, and 1M and pages 36-56. Enclosed herewith is a paper copy of the sequence listing as well as the required computer readable medium having the sequence listing.



### **Compliance with 37 C.F.R. §1.821-1.825 and the Sequence Listing**

In order to comply with the Requirements for Patent Applications Containing Nucleotide Sequence and/or amino acid sequences disclosures, 37 C.F.R. §1.821-1.825, and further to the submission of a Sequence Listing, Applicants submit herewith the Sequence Listing in paper format, filed herewith, in compliance with 37 1.821(c) (which also complies with box 2 on the Notice to Comply). Further, the required computer readable medium having the sequence listing in compliance of 37 CFR 1.821(e) (which also complies with box 3 on the Notice To Comply).. As required under 37 C.F.R. §1.821(f) (and the Notice to Comply), I hereby verify that the data on the enclosed disk and paper copies of the Sequence Listing are identical. Pursuant to 37 C.F.R. §1.821(g) (and the Notice to comply), no new matter is being added herewith.

### **Rejection under 35 U.S.C. §112, first paragraph**

Claims 1-36 were rejected under 35 U.S.C. §112, first paragraph, as not enabling for the method as claimed. In brief, the Office Action stated that “based on the state of the prior art, the breadth of the claims, and applicant’s single example of an NP-Ig capable of loading MHC class I and stimulating CD8+ T cells, and the single example of a combination of NP-Ig and pA:U dsRNA capable of stimulating cytotoxic T cells, it would have been considered unpredictable by the skilled artisan at the time of filing to use any antigenized immunoglobulin alone or in combination with pA:U to load MHC class I molecules on antigen presenting cells or to stimulate CD8+ T cells.” See OA page 6, line 19 through page 7, line 2.

Claims 2-36 have been canceled. Claim 1 has been amended to be dependent upon the composition claim 41 and to specify that the agent used in the method of generating an enhanced T cell response is, the IgG having the at least one T cell epitope of the antigen covalently attached within the CDR region of the IgG without modification of the Fc portion and to recite that the method is for inducing a Tc1 response in a patient. The Tc1 response is a well understood and well-characterized immune response and is a cytotoxic immune response that involves high levels of IFN $\gamma$  and IL2.

The test for enablement involves identifying whether the experimentation needed to practice the invention is undue or unreasonable (in re Wands, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988)). There are many factors to be considered when determining whether

any experimentation needed is “undue.” These include the breadth of the claims, the state of the prior art, the level of predictability in the art, the amount of direction provided, and the existence of working examples.

The currently claimed invention is enabled, because the specification as supplemented by the knowledge of the skilled artisan provides guidance as to how to use the combination of the recombinant IgG and dsRNA to induce a Tc1 T cell response. Neither the dsRNA nor the recombinant IgG were able by themselves to induce such a response. Further, as discussed below, appropriate balances of the Wands factors show the claimed invention is enabled:

With respect to the presence of working examples, Applicants respectfully submit that “nothing more than objective enablement is required, and therefore it is irrelevant whether this teaching is provided through broad terminology or illustrative examples.” *In re Wright*, 999 F.2d 1557 (Fed. Cir. 1993).

Additionally, the Applicants disclose working examples of the use of the recombinant antibody and dsRNA of the claimed invention to activate Tc1 responses in viral and tumor applications in the specification on pages 75-83 (Examples 35-44). In addition to specific working examples, the specification provides direction to the skilled artisan on how to make, identify and use further conjugates as follows: there is teaching of the types of antigens (Figures 1E-1M and pp. 29-30) for which the claimed methods would be useful, there is teaching of the method of construction and production of the recombinant IgG (pp. 27-31), there is teaching of the purification of the recombinant IgG (pp. 31-32), there is teaching of the types of viral and tumor diseases that could be treated (pp. Figures 1E-1M and pp. 29-30), and there is teaching of the types of dsRNA that can be used in the combination (pp. 32-33). Thus, the data generated was relevant to both diseases, viral and cancer and was identified using a very well-characterized Tc epitope.

The teaching of the specification is supplemented by the knowledge of the skilled artisan, and the state of the prior art. Further, the predictability of the art is such that one of skill in the art could easily identify and produce claimed recombinant IgG and dsRNA combinations without undue experimentation. The specification provides exemplary recombinant IgG molecules and dsRNA molecules. There is a strong general knowledge of linkages and methods of producing such recombinant IgG molecules and dsRNA molecules. Also, the level of predictability for

producing recombinant IgG and dsRNA molecules for use in the methods is very high. Meaning that a working recombinant IgG and dsRNA combination can be made using the teaching in the specification with little uncertainty as to whether it will work. This is also true because the level of skill of the artisan is high, that of a Ph.D or experienced technician. Thus, Applicants respectfully submit that in view of the teachings of the specification, mentioned above, and the high level of ordinary skill in this art, undue experimentation would not be needed to make and use the claimed conjugates.

**Rejection under 35 U.S.C. §112, second paragraph**

Claims 13-29 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for the following reasons:

The Office Action stated that Claim 13 recites, “[a] method of loading an antigen presenting cells and generating an immune response to an antigen in a patient by use at least one peptide epitope attached to an immunoglobulin or portion thereof thereby forming an Ig-peptide complex wherein when the Ig-peptide complex is administered to a patient in vivo in conjunction with dsRNA....” (emphasis added by Office Action), but lacks any particular method steps.

In dependent claim 13 and dependent claims 14-29 have been canceled, rendering this rejection moot. Further, New claims 1, 68, 72 and 76 are drafted to contain specific method steps.

Claims 13-29 were further rejected under 35 U.S.C. §101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process.

Independent claim 13 and dependent claims 14-29 have been canceled rendering this rejection moot. None of the new claims use the wording “for use...” or “wherein when...” or recite a use without reciting method steps.

**Rejection under 35 U.S.C. §103(a)**

The Office Action rejected claims 1-4, 6-7, 9-12, 30-32, and 34-36 under 35 U.S.C. §103(a) as unpatentable over US Patent No. 5,969,109 (1999), hereinafter referred to as Bona et

al. in view of US Patent No. 3,906,092 (1975), hereinafter referred to as Hilleman et al., and Cella et al. (1999) J. Exp. Med., Vol. 189(5), 821-829.

More specifically, the Office Action states that Bona et al. teaches methods of enhancing the cellular and humoral immune response to an antigen by administering a recombinant antibody comprising one or more viral T helper and/or B cell epitopes to a mammal and that the T and/or B cell epitopes are covalently attached to the immunoglobulin and further that the immunoglobulin was capable of stimulating HA specific CD4+ helper T cells. The Office Action further states that “Bona et al. differs from the present invention of failing to teach the co-administration of dsRNA with the antigenized immunoglobulin.” But that “Hilleman et al. supplements Bona et al. by teaching that immune responses to antigen in adjuvant can be enhanced by the inclusion of dsRNA, such as poly A:U”. While Hilleman et al. and Bona et al. do not teach that the dsRNA upregulates T cell response, the Office Action states that Cella et al. “supplements both Bona et al. and Hilleman et al. by teaching that dsRNA exhibits increased capacity to prime and polarize T cells.”

### The Claims

Claims 2-36 have been canceled. Claim 1 has been amended to be dependent upon the composition claim 41 and to specify that the agent used in the method of generating an enhanced T cell response is, “the IgG having the at least one T cell epitope of the antigen covalently attached within the CDR region of the IgG without modification of the Fc portion” and that the T cell response is “a Tc1 response.” The Tc1 response is a well understood and well-characterised immune response and is a cytotoxic immune response that involves high levels of IFN $\gamma$  and IL2

To establish a prima facie case of obviousness (MPEP 2143) states,

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references, when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant’s disclosure (*In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1440 (Fed. Cir. 1991)).

Compare with: *Ortho-McNeil Pharmaceutical v. Mylan Labs* (Fed. Cir. 2008), 2007-1223, *Abbott Laboratories v. Sandoz, Inc.*, 544 F.3d 1341 (Fed. Cir. 2008), and *Proctor & Gamble Co. v Teva Pharm. USA, Inc.*, 2008-1404,-1405, -1406 (Fed. Cir. 2009).

In contrast to the requirements of MPEP 2143, it is shown that at the time of the invention, (1) the combination would not have taught all of the claimed limitations, (2) there was no motivation to combine, and (3) the resulting claimed invention would not have been expected by one of ordinary skill in the art.

The combination of references does not teach all of the claim limitations

The combination of Bona et al. Hilleman et al. and Cella et al. does not teach all of the claim elements, because neither Bona et al., Hilleman et al. nor Cella et al. teaches that the recombinant IgG and/or the dsRNA provides an enhanced Tc1 response. Bona et al. teaches that the recombinant antibodies can be used to induce an antibody response. Hilleman et al. is directed to use of polymers such as dsRNA as adjuvants in typical oil in water vaccines to increase the antibody response to the virus. Cella et al. is directed to the priming of T cells and specifically T helper responses.

The present inventors discovered that when recombinant antibodies are administered in conjunction with dsRNA, immunity was effectively redirected to the Tc1 response, thereby providing an enhanced Tc1 response. Claim 1 has been amended accordingly. Tc1 cells are a subpopulation of cytotoxic T cells characterized by secretion of IFN $\gamma$  and IL2 but not IL4. Tc2 cells are a subpopulation of cytotoxic T cells characterized by secretion of IL4, but not IFN $\gamma$ .

As discussed in the Applicant's specification, the Tc1 responses are associated with rearrangement of immunoglobulin genes to complement-dependent antibody, and the activation of phagocytic cells such as macrophages. Tc2 responses are associated with rearrangements of immunoglobulin genes to complement-independent and IgE antibodies and with the mobilization of nonphagocytic defenses such as eosinophils that combat microbes by the release of toxic factors. Tc1 responses are the desired response for fighting intracellular viral or bacterial infections, whereas Tc2 responses are favored for combating extracellular parasitic infection.

None of the references cited by the Office Action teaches induction of the specific subset of Tc1 responses. In fact, most of these references teach only an increased antibody response, having nothing to do with cytotoxic T cells. Antibody production is a humoral immune response, and while there are implications that T cells responses are included, these are only Thelper cells and are not implicated in the Tc response, which the presently claimed invention is concerned with. Even assuming that dsRNA was a known adjuvant, none of the references teach or suggest that when dsRNA is administered in combination with recombinant antibodies a Tc1 response is induced.

Thus, none of the cited art alone or in combination teaches that a combination of dsRNA with the IgG constructs would enhance the Tc1 response, and hence enable the viral and tumor treatment effects shown in the invention of claim 1.

Even if the combination did teach the induction of the Tc1 response, there would be no motivation to combine

Adjuvants have been used in the past to increase the antibody response to an antigen. This response includes both the humoral response (activation of B cells to produce antibodies), and the subset of the Tcell response that includes the activation of Thelper cells. Neither of these responses is part of the Tc1 response. Thus, the knowledge of the action of adjuvants would not be seen as a reason to add the dsRNA to a recombinant antibody to induce a Tc1 response and there would have been no motivation to combine the references to include the dsRNA with an IgG chimera instead of the claimed invention.

Further, it is known that inducing one arm of immunity (Th or B cell immunity) is not predictive for inducing another (Tc). The mechanism of induction of Tc (involving antigen processing through very specific pathways, presentation in the context of different molecules – MHC I to a distinct subset of T cells) is very different than that of Th or B cell immunity, and therefore at least without the teachings of the current specification, the Th or B cell immunity would not suggested to one of ordinary skill in the art the claimed mechanism of inducing Tc

There are unexpected properties

The combination of the recombinant IgG and the dsRNA as a whole possesses unexpected properties that could not have reasonably been viewed as a likely outcome of the invention. The wide range of possible outcomes and the relative unlikelihood that the resulting compound would exhibit the activation of the Tc1 response makes the method of using the agent and the dsRNA combination non-obvious. Neither the dsRNA nor the recombinant IgG were able by themselves to induce such a response. It was only when the two were administered in combination that the Tc1 response was possible.

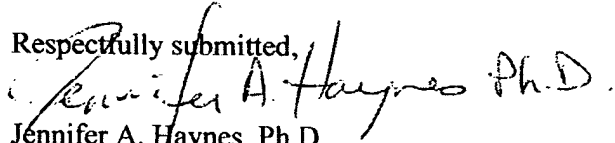
Thus, in contrast to the requirements of MPEP 2143, at the time of the invention, (1) the combination would not have taught all of the claimed limitations because the specific Tc1 response was not taught, (2) there was no motivation to combine, because, if anything, that art suggested that including an IgG chimera instead of the claimed invention would have activated the humoral response rather than the Tc1 response, and (3) the resulting claimed invention would not have been expected by one of ordinary skill in the art, because only the previously undisclosed combination dsRNA recombinant IgG produces the response (neither produces the response alone).

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 408-993-1800.

Respectfully submitted,

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San Jose, CA 95110



# SEQUENCE LISTING

<110> Bot, Adrian  
Wang, Lilin  
Smith, Dan  
Phillips, Bill  
Multicell Immunotherapeutics, Inc.

<120> Methods and Compositions to Generate and  
Control the Effector Profile of T Cells by Simultaneous  
Loading and Activation of Selected Subsets of Antigen  
Presenting Cells

<130> 8114-008-WO-US

<140> 10/527,931  
<141> 2005-08-26

<150> US 60/412,219  
<151> 2002-09-20

<150> WO PCT/US03/30188  
<151> 2002-09-20

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Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu  
35 40 45  
Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe  
50 55 60  
Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly  
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 35 40 45  
 Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu  
 50 55 60  
 Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His  
 65 70 75 80  
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1 5

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Val	Asp	Val	Ser	His	Glu	Asp	Pro	Glu	Val	Lys	Phe	Asn	Trp	Tyr	Val	
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Asp	Gly	Val	Glu	Val	His	Asn	Ala	Lys	Thr	Lys	Pro	Arg	Glu	Glu	Gln	
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Tyr	Asn	Ser	Thr	Tyr	Arg	Val	Val	Ser	Val	Leu	Thr	Val	Leu	His	Gln	
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Lys	Asn	Gln	Val	Ser	Leu	Thr	Cys	Leu	Val	Lys	Gly	Phe	Tyr	Pro	Ser	
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Asp	Ile	Ala	Val	Glu	Trp	Glu	Ser	Asn	Gly	Gln	Pro	Glu	Asn	Asn	Tyr	
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Asn	Pro	Glu	Cys	Asp	Pro	Leu	Leu	Pro	Val	Arg	Ser	Trp	Ser	Tyr	Ile	85	90	95	
Val	Glu	Thr	Pro	Asn	Ser	Glu	Asn	Gly	Ile	Cys	Tyr	Pro	Gly	Asp	Phe	100	105	110	
Ile	Asp	Tyr	Glu	Glu	Leu	Arg	Glu	Gln	Leu	Ser	Ser	Val	Ser	Ser	Phe	115	120	125	
Glu	Arg	Phe	Glu	Ile	Phe	Pro	Lys	Glu	Ser	Ser	Trp	Pro	Asn	His	Asn	130	135	140	
Thr	Thr	Lys	Gly	Val	Thr	Ala	Ala	Cys	Ser	His	Ala	Gly	Lys	Ser	Ser	145	150	155	160
Phe	Tyr	Arg	Asn	Leu	Leu	Trp	Leu	Thr	Glu	Lys	Glu	Gly	Ser	Tyr	Pro	165	170	175	
Lys	Leu	Lys	Asn	Ser	Tyr	Val	Asn	Lys	Lys	Gly	Lys	Glu	Val	Leu	Val	180	185	190	
Leu	Trp	Gly	Ile	His	His	Pro	Ser	Asn	Ser	Lys	Asp	Gln	Gln	Asn	Ile	195	200	205	
Tyr	Gln	Asn	Glu	Asn	Ala	Tyr	Val	Ser	Val	Val	Thr	Ser	Asn	Tyr	Asn	210	215	220	
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Ala	Gly	Arg	Met	Asn	Tyr	Tyr	Trp	Thr	Leu	Leu	Lys	Pro	Gly	Asp	Thr	245	250	255	
Ile	Ile	Phe	Glu	Ala	Asn	Gly	Asn	Leu	Ile	Ala	Pro	Arg	Tyr	Ala	Phe	260	265	270	
Ala	Leu	Ser	Arg	Gly	Phe	Gly	Ser	Gly	Ile	Ile	Thr	Ser	Asn	Ala	Ser	275	280	285	
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Pro	Lys	Tyr	Val	Arg	Ser	Ala	Lys	Leu	Arg	Met	Val	Thr	Gly	Leu	Arg	325	330	335	
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Thr	Gln	Asn	Ala	Ile	Asn	Gly	Ile	Thr	Asn	Lys	Val	Asn	Ser	Val	Ile	385	390	395	400
Glu	Lys	Met	Asn	Ile	Gln	Phe	Thr	Ala	Val	Gly	Lys	Glu	Phe	Asn	Lys	405	410	415	
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Glu	Arg	Thr	Leu	Asp	Phe	His	Asp	Ser	Asn	Val	Lys	Asn	Leu	Tyr	Glu	450	455	460	
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Cys	Phe	Glu	Phe	Tyr	His	Lys	Cys	Asp	Asn	Glu	Cys	Met	Glu	Ser	Val	485	490	495	

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Glu	His	Pro	Ser	Ala	Gly	Lys	Asp	Pro	Lys	Lys	Thr	Gly	Gly	Pro	Ile
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	450					455					460				
Glu	Leu	Ser	Asp	Glu	Lys	Ala	Thr	Asn	Pro	Ile	Val	Pro	Ser	Phe	Asp
465					470					475					480
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		20						25					30		
Glu	Leu	Tyr	Trp	Val	Arg	Gln	Ala	Pro	Gly	Gln	Gly	Leu	Glu	Asp	Leu
	35						40					45			
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	50					55				60					
Gln	Gly	Arg	Val	Thr	Ile	Thr	Ala	Asp	Glu	Ser	Thr	Asn	Thr	Ala	Tyr
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Met	Glu	Leu	Ser	Ser	Leu	Arg	Ser	Glu	Asp	Thr	Ala	Val	Tyr	Phe	Cys
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Ala Gly Lys Asn Thr Asp Leu Glu Val Leu Met Glu Trp Leu Lys Thr  
35 40 45  
Arg Pro Ile Leu Ser Pro Leu Thr Lys Gly Val Leu Gly Phe Val Phe  
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Thr Leu Thr Val Pro Ser Glu Arg Gly Leu Gln Arg Arg Arg Phe Val  
65 70 75 80  
Gln Asn Ala Leu Asn Gly Asn Gly Asp Pro Asn Asn Met Asp Lys Ala  
85 90 95  
Val Lys Leu Tyr Arg Lys Leu Lys Arg Glu Ile Thr Phe Tyr Gly Ala  
100 105 110  
Lys Glu Val Ala Leu Ser Tyr Ser Thr Gly Ala Leu Ala Ser Cys Met  
115 120 125  
Gly Leu Ile Tyr Asn Arg Met Gly Thr Val Thr Thr Glu Val Ala Phe  
130 135 140  
Gly Leu Val Cys Ala Thr Cys Glu Gln Ile Ala Asp Ser Gln His Arg  
145 150 155 160  
Ser His Arg Gln Met Val Thr Thr Thr Asn Pro Leu Ile Arg His Glu  
165 170 175  
Asn Arg Met Val Leu Ala Ser Thr Thr Ala Lys Ala Met Glu Gln Met  
180 185 190  
Ala Gly Ser Ser Glu Gln Ala Ala Glu Ala Met Glu Val Ala Ser Gln  
195 200 205  
Ala Arg Gln Met Val Gln Ala Met Arg Thr Val Gly Thr His Pro Ser  
210 215 220  
Ser Ser Ala Gly Leu Lys Asp Asp Leu Leu Glu Asn Leu Gln Ala Tyr  
225 230 235 240  
Gln Lys Arg Met Gly Val Gln Leu Gln Arg Phe Lys  
245 250

<210> 12  
<211> 97  
<212> PRT  
<213> Influenza A virus

<220>

<223> Influenza A virus matrix protein M2

<400> 12

Met	Ser	Leu	Leu	Thr	Glu	Val	Glu	Thr	Pro	Thr	Arg	Asn	Gly	Trp	Glu
1				5					10					15	
Cys	Ser	Cys	Ser	Asp	Ser	Ser	Asp	Pro	Leu	Val	Ile	Ala	Ala	Ser	Ile
			20					25					30		
Ile	Gly	Ile	Leu	His	Phe	Ile	Leu	Trp	Ile	Leu	Asp	Arg	Leu	Phe	Phe
		35					40					45			
Lys	Cys	Ile	Tyr	Arg	Arg	Leu	Lys	Tyr	Gly	Leu	Lys	Arg	Gly	Pro	Ser
	50					55					60				
Thr	Glu	Gly	Val	Pro	Lys	Ser	Met	Arg	Glu	Glu	Tyr	Arg	Gln	Glu	Gln
65					70					75				80	
Gln	Asn	Ala	Val	Asp	Val	Asp	Asp	Gly	His	Phe	Val	Asn	Ile	Glu	Leu
				85					90					95	

Glu

<210> 13

<211> 181

<212> PRT

<213> Hepatitis C virus

<220>

<223> Hepatitis C virus (HCV) NS3 protease

<400> 13

Ala	Pro	Ile	Thr	Ala	Tyr	Ala	Gln	Gln	Thr	Arg	Gly	Leu	Leu	Gly	Cys
1				5					10					15	
Ile	Ile	Thr	Ser	Leu	Thr	Gly	Arg	Asp	Arg	Asn	Gln	Val	Glu	Gly	Glu
			20					25					30		
Val	Gln	Val	Val	Ser	Thr	Ala	Thr	Gln	Ser	Phe	Leu	Ala	Thr	Cys	Ile
		35					40					45			
Asn	Gly	Val	Cys	Trp	Thr	Val	Phe	His	Gly	Ala	Gly	Ser	Lys	Thr	Leu
	50					55					60				
Ala	Gly	Pro	Lys	Gly	Pro	Ile	Thr	Gln	Met	Tyr	Thr	Asn	Val	Asp	Gln
65					70				75					80	
Asp	Leu	Val	Gly	Trp	Pro	Ala	Pro	Pro	Gly	Ala	Arg	Ser	Leu	Thr	Pro
				85					90					95	
Cys	Thr	Cys	Gly	Ser	Ser	Asp	Leu	Tyr	Leu	Val	Thr	Arg	His	Ala	Asp
		100						105					110		
Val	Val	Pro	Val	Arg	Arg	Arg	Ser	Asp	Ser	Arg	Gly	Ser	Leu	Leu	Ser
		115					120					125			
Pro	Arg	Pro	Ile	Ser	Tyr	Leu	Lys	Gly	Ser	Ser	Gly	Gly	Pro	Leu	Leu
	130					135						140			
Cys	Pro	Ser	Gly	His	Ala	Val	Gly	Ile	Phe	Arg	Ala	Ala	Val	Cys	Thr
145					150					155				160	
Arg	Gly	Val	Ala	Lys	Ala	Val	Asp	Phe	Val	Pro	Val	Glu	Ser	Met	Glu
				165					170					175	

Thr Thr Met Arg Ser  
180

<210> 14



<211> 139  
 <212> PRT  
 <213> Hepatitis B virus

<220>  
 <223> Hepatitis B virus (HBV) core antigen

<400> 14  
 Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Ser Val Glu Leu Leu  
 1 5 10 15  
 Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Ile Arg Asp Leu Leu Asp  
 20 25 30  
 Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys  
 35 40 45  
 Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu  
 50 55 60  
 Leu Met Asn Leu Ala Thr Trp Val Gly Ser Asn Leu Glu Asp Pro Ala  
 65 70 75 80  
 Ser Arg Glu Leu Val Val Ser Tyr Val Asn Val Asn Met Gly Leu Lys  
 85 90 95  
 Ile Arg Gln Leu Leu Arg Phe His Ile Ser Cys Leu Thr Phe Gly Arg  
 100 105 110  
 Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr  
 115 120 125  
 Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile  
 130 135

<210> 15  
 <211> 105  
 <212> PRT  
 <213> Human papilloma virus type 18

<220>  
 <223> Human papilloma virus type 18 (HPV-18) E7 protein

<400> 15  
 Met His Gly Pro Lys Ala Thr Leu Gln Asp Ile Val Leu His Leu Glu  
 1 5 10 15  
 Pro Gln Asn Glu Ile Pro Val Asp Leu Leu Cys His Glu Gln Leu Ser  
 20 25 30  
 Asp Ser Glu Glu Glu Asn Asp Glu Ile Asp Gly Val Asn His Gln His  
 35 40 45  
 Leu Pro Ala Arg Arg Ala Glu Pro Gln Arg His Thr Met Leu Cys Met  
 50 55 60  
 Cys Cys Lys Cys Glu Ala Arg Ile Lys Leu Val Val Glu Ser Ser Ala  
 65 70 75 80  
 Asp Asp Leu Arg Ala Phe Gln Gln Leu Phe Leu Asn Thr Leu Ser Phe  
 85 90 95  
 Val Cys Pro Trp Cys Ala Ser Gln Gln  
 100 105

<210> 16

<211> 98  
 <212> PRT  
 <213> Human papilloma virus type 16

<220>  
 <223> Human papilloma virus type 16 (HPV-16) E7 protein

<400> 16  
 Met His Gly Asp Thr Pro Thr Leu His Glu Tyr Met Leu Asp Leu Gln  
 1 5 10 15  
 Pro Glu Thr Thr Asp Leu Tyr Cys Tyr Glu Gln Leu Asn Asp Ser Ser  
 20 25 30  
 Glu Glu Glu Asp Glu Ile Asp Gly Pro Ala Gly Gln Ala Glu Pro Asp  
 35 40 45  
 Arg Ala His Tyr Asn Ile Val Thr Phe Cys Cys Lys Cys Asp Ser Thr  
 50 55 60  
 Leu Arg Leu Cys Val Gln Ser Thr His Val Asp Ile Arg Thr Leu Glu  
 65 70 75 80  
 Asp Leu Leu Met Gly Thr Leu Gly Ile Val Cys Pro Ile Cys Ser Gln  
 85 90 95  
 Lys Pro

<210> 17  
 <211> 158  
 <212> PRT  
 <213> Human papilloma virus type 18

<220>  
 <223> Human papilloma virus type 18 (HPV-18) E6 protein

<400> 17  
 Met Ala Arg Phe Glu Asp Pro Thr Arg Arg Pro Tyr Lys Leu Pro Asp  
 1 5 10 15  
 Leu Cys Thr Glu Leu Asn Thr Ser Leu Gln Asp Ile Glu Ile Thr Cys  
 20 25 30  
 Val Tyr Cys Lys Thr Val Leu Glu Leu Thr Glu Val Phe Glu Phe Ala  
 35 40 45  
 Phe Lys Asp Leu Phe Val Val Tyr Arg Asp Ser Ile Pro His Ala Ala  
 50 55 60  
 Cys His Lys Cys Ile Asp Phe Tyr Ser Arg Ile Arg Glu Leu Arg His  
 65 70 75 80  
 Tyr Ser Asp Ser Val Tyr Gly Asp Thr Leu Glu Lys Leu Thr Asn Thr  
 85 90 95  
 Gly Leu Tyr Asn Leu Leu Ile Arg Cys Leu Arg Cys Gln Lys Pro Leu  
 100 105 110  
 Asn Pro Ala Glu Lys Leu Arg His Leu Asn Glu Lys Arg Arg Phe His  
 115 120 125  
 Lys Ile Ala Gly His Tyr Arg Gly Gln Cys His Ser Cys Cys Asn Arg  
 130 135 140  
 Ala Arg Gln Glu Arg Leu Gln Arg Arg Arg Glu Thr Gln Val  
 145 150 155

<210> 18  
 <211> 158  
 <212> PRT  
 <213> Human papilloma virus type 16

<220>  
 <223> Human papilloma virus type 16 (HPV-16) E6 protein

<400> 18  
 Met His Gln Lys Arg Thr Ala Met Phe Gln Asp Pro Gln Glu Arg Pro  
 1 5 10 15  
 Arg Lys Leu Pro His Leu Cys Thr Glu Leu Gln Thr Thr Ile His Asp  
 20 25 30  
 Ile Ile Leu Glu Cys Val Tyr Cys Lys Gln Gln Leu Leu Arg Arg Glu  
 35 40 45  
 Val Tyr Asp Phe Ala Phe Arg Asp Leu Cys Ile Val Tyr Arg Asp Gly  
 50 55 60  
 Asn Pro Tyr Ala Val Cys Asp Lys Cys Leu Lys Phe Tyr Ser Lys Ile  
 65 70 75 80  
 Ser Glu Tyr Arg Tyr Tyr Cys Tyr Ser Val Tyr Gly Thr Thr Leu Glu  
 85 90 95  
 Gln Gln Tyr Asn Lys Pro Leu Cys Asp Leu Leu Ile Arg Cys Ile Asn  
 100 105 110  
 Cys Gln Lys Pro Leu Cys Pro Glu Glu Lys Gln Arg His Leu Asp Lys  
 115 120 125  
 Lys Gln Arg Phe His Asn Ile Arg Gly Arg Trp Thr Gly Arg Cys Met  
 130 135 140  
 Ser Cys Cys Arg Ser Ser Arg Thr Arg Arg Glu Thr Gln Leu  
 145 150 155

<210> 19  
 <211> 661  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> melanocyte lineage-specific antigen gp100, melanocyte  
 protein Pmel 17 (Silver locus protein homolog, SILV),  
 melanoma-associated ME20 antigen (ME20-M), 95 kDa  
 melanocyte-specific secreted glycoprotein

<400> 19  
 Met Asp Leu Val Leu Lys Arg Cys Leu Leu His Leu Ala Val Ile Gly  
 1 5 10 15  
 Ala Leu Leu Ala Val Gly Ala Thr Lys Val Pro Arg Asn Gln Asp Trp  
 20 25 30  
 Leu Gly Val Ser Arg Gln Leu Arg Thr Lys Ala Trp Asn Arg Gln Leu  
 35 40 45  
 Tyr Pro Glu Trp Thr Glu Ala Gln Arg Leu Asp Cys Trp Arg Gly Gly  
 50 55 60  
 Gln Val Ser Leu Lys Val Ser Asn Asp Gly Pro Thr Leu Ile Gly Ala  
 65 70 75 80  
 Asn Ala Ser Phe Ser Ile Ala Leu Asn Phe Pro Gly Ser Gln Lys Val

				85				90					95				
Leu	Pro	Asp	Gly	Gln	Val	Ile	Trp	Val	Asn	Asn	Thr	Ile	Ile	Asn	Gly		
			100					105					110				
Ser	Gln	Val	Trp	Gly	Gly	Gln	Pro	Val	Tyr	Pro	Gln	Glu	Thr	Asp	Asp		
			115					120					125				
Ala	Cys	Ile	Phe	Pro	Asp	Gly	Gly	Pro	Cys	Pro	Ser	Gly	Ser	Trp	Ser		
			130				135					140					
Gln	Lys	Arg	Ser	Phe	Val	Tyr	Val	Trp	Lys	Thr	Trp	Gly	Gln	Tyr	Trp		
145					150					155					160		
Gln	Val	Leu	Gly	Gly	Pro	Val	Ser	Gly	Leu	Ser	Ile	Gly	Thr	Gly	Arg		
				165					170						175		
Ala	Met	Leu	Gly	Thr	His	Thr	Met	Glu	Val	Thr	Val	Tyr	His	Arg	Arg		
			180					185					190				
Gly	Ser	Arg	Ser	Tyr	Val	Pro	Leu	Ala	His	Ser	Ser	Ser	Ala	Phe	Thr		
			195				200						205				
Ile	Thr	Asp	Gln	Val	Pro	Phe	Ser	Val	Ser	Val	Ser	Gln	Leu	Arg	Ala		
			210			215						220					
Leu	Asp	Gly	Gly	Asn	Lys	His	Phe	Leu	Arg	Asn	Gln	Pro	Leu	Thr	Phe		
225					230					235					240		
Ala	Leu	Gln	Leu	His	Asp	Pro	Ser	Gly	Tyr	Leu	Ala	Glu	Ala	Asp	Leu		
				245					250					255			
Ser	Tyr	Thr	Trp	Asp	Phe	Gly	Asp	Ser	Ser	Gly	Thr	Leu	Ile	Ser	Arg		
			260					265					270				
Ala	Leu	Val	Val	Thr	His	Thr	Tyr	Leu	Glu	Pro	Gly	Pro	Val	Thr	Ala		
			275				280					285					
Gln	Val	Val	Leu	Gln	Ala	Ala	Ile	Pro	Leu	Thr	Ser	Cys	Gly	Ser	Ser		
			290			295					300						
Pro	Val	Pro	Gly	Thr	Thr	Asp	Gly	His	Arg	Pro	Thr	Ala	Glu	Ala	Pro		
305					310					315					320		
Asn	Thr	Thr	Ala	Gly	Gln	Val	Pro	Thr	Thr	Glu	Val	Val	Gly	Thr	Thr		
				325					330					335			
Pro	Gly	Gln	Ala	Pro	Thr	Ala	Glu	Pro	Ser	Gly	Thr	Thr	Ser	Val	Gln		
			340					345					350				
Val	Pro	Thr	Thr	Glu	Val	Ile	Ser	Thr	Ala	Pro	Val	Gln	Met	Pro	Thr		
			355				360					365					
Ala	Glu	Ser	Thr	Gly	Met	Thr	Pro	Glu	Lys	Val	Pro	Val	Ser	Glu	Val		
			370			375					380						
Met	Gly	Thr	Thr	Leu	Ala	Glu	Met	Ser	Thr	Pro	Glu	Ala	Thr	Gly	Met		
385					390					395				400			
Thr	Pro	Ala	Glu	Val	Ser	Ile	Val	Val	Leu	Ser	Gly	Thr	Thr	Ala	Ala		
				405					410					415			
Gln	Val	Thr	Thr	Thr	Glu	Trp	Val	Glu	Thr	Thr	Ala	Arg	Glu	Leu	Pro		
			420					425					430				
Ile	Pro	Glu	Pro	Glu	Gly	Pro	Asp	Ala	Ser	Ser	Ile	Met	Ser	Thr	Glu		
			435				440					445					
Ser	Ile	Thr	Gly	Ser	Leu	Gly	Pro	Leu	Leu	Asp	Gly	Thr	Ala	Thr	Leu		
			450			455					460						
Arg	Leu	Val	Lys	Arg	Gln	Val	Pro	Leu	Asp	Cys	Val	Leu	Tyr	Arg	Tyr		
465					470					475					480		
Gly	Ser	Phe	Ser	Val	Thr	Leu	Asp	Ile	Val	Gln	Gly	Ile	Glu	Ser	Ala		
				485					490					495			
Glu	Ile	Leu	Gln	Ala	Val	Pro	Ser	Gly	Glu	Gly	Asp	Ala	Phe	Glu	Leu		
			500					505				510					
Thr	Val	Ser	Cys	Gln	Gly	Gly	Leu	Pro	Lys	Glu	Ala	Cys	Met	Glu	Ile		



<220>

<223> tyrosinase-related protein-2 (TRP-2, TYRP2),  
DOPachrome tautomerase

<400> 21

Met	Ser	Pro	Leu	Trp	Trp	Gly	Phe	Leu	Leu	Ser	Cys	Leu	Gly	Cys	Lys
1				5					10					15	
Ile	Leu	Pro	Gly	Ala	Gln	Gly	Gln	Phe	Pro	Arg	Val	Cys	Met	Thr	Val
			20					25					30		
Asp	Ser	Leu	Val	Asn	Lys	Glu	Cys	Cys	Pro	Arg	Leu	Gly	Ala	Glu	Ser
		35					40					45			
Ala	Asn	Val	Cys	Gly	Ser	Gln	Gln	Gly	Arg	Gly	Gln	Cys	Thr	Glu	Val
	50					55					60				
Arg	Ala	Asp	Thr	Arg	Pro	Trp	Ser	Gly	Pro	Tyr	Ile	Leu	Arg	Asn	Gln
65					70					75					80
Asp	Asp	Arg	Glu	Leu	Trp	Pro	Arg	Lys	Phe	Phe	His	Arg	Thr	Cys	Lys
			85						90					95	
Cys	Thr	Gly	Asn	Phe	Ala	Gly	Tyr	Asn	Cys	Gly	Asp	Cys	Lys	Phe	Gly
			100					105					110		
Trp	Thr	Gly	Pro	Asn	Cys	Glu	Arg	Lys	Lys	Pro	Pro	Val	Ile	Arg	Gln
		115						120					125		
Asn	Ile	His	Ser	Leu	Ser	Pro	Gln	Glu	Arg	Glu	Gln	Phe	Leu	Gly	Ala
	130					135					140				
Leu	Asp	Leu	Ala	Lys	Lys	Arg	Val	His	Pro	Asp	Tyr	Val	Ile	Thr	Thr
145					150					155					160
Gln	His	Trp	Val	Gly	Leu	Leu	Gly	Pro	Asn	Gly	Thr	Gln	Pro	Gln	Phe
				165					170					175	
Ala	Asn	Cys	Ser	Val	Tyr	Asp	Phe	Phe	Val	Trp	Leu	His	Tyr	Tyr	Ser
			180					185					190		
Val	Arg	Asp	Thr	Leu	Leu	Gly	Gly	Phe	Phe	Pro	Trp	Leu	Lys	Val	Tyr
		195					200					205			
Tyr	Tyr	Arg	Phe	Val	Ile	Gly	Leu	Arg	Val	Trp	Gln	Trp	Glu	Val	Ile
	210					215					220				
Ser	Cys	Lys	Leu	Ile	Lys	Arg	Ala	Thr	Thr	Arg	Gln	Pro			
225					230					235					

<210> 22

<211> 337

<212> PRT

<213> Homo sapiens

<220>

<223> carcinoma embryonic antigen precursor,  
carcinoembryonic antigen-related cell adhesion  
molecule 18

<400> 22

Met	Asp	Leu	Ser	Arg	Pro	Arg	Trp	Ser	Leu	Trp	Arg	Arg	Val	Phe	Leu
1				5					10					15	
Met	Ala	Ser	Leu	Leu	Ala	Cys	Gly	Ile	Cys	Gln	Ala	Ser	Gly	Gln	Ile
			20					25					30		
Phe	Ile	Thr	Gln	Thr	Leu	Gly	Ile	Lys	Gly	Tyr	Arg	Thr	Val	Val	Ala



Pro	Pro	Gly	Ala	Ala	Ser	Thr	Gln	Val	Cys	Thr	Gly	Thr	Asp	Met	Lys
			20					25					30		
Leu	Arg	Leu	Pro	Ala	Ser	Pro	Glu	Thr	His	Leu	Asp	Met	Leu	Arg	His
		35					40					45			
Leu	Tyr	Gln	Gly	Cys	Gln	Val	Val	Gln	Gly	Asn	Leu	Glu	Leu	Thr	Tyr
		50				55					60				
Leu	Pro	Thr	Asn	Ala	Ser	Leu	Ser	Phe	Leu	Gln	Asp	Ile	Gln	Glu	Val
65					70					75					80
Gln	Gly	Tyr	Val	Leu	Ile	Ala	His	Asn	Gln	Val	Arg	Gln	Val	Pro	Leu
				85					90					95	
Gln	Arg	Leu	Arg	Ile	Val	Arg	Gly	Thr	Gln	Leu	Phe	Glu	Asp	Asn	Tyr
			100					105					110		
Ala	Leu	Ala	Val	Leu	Asp	Asn	Gly	Asp	Pro	Leu	Asn	Asn	Thr	Thr	Pro
		115					120					125			
Val	Thr	Gly	Ala	Ser	Pro	Gly	Gly	Leu	Arg	Glu	Leu	Gln	Leu	Arg	Ser
		130				135					140				
Leu	Thr	Glu	Ile	Leu	Lys	Gly	Gly	Val	Leu	Ile	Gln	Arg	Asn	Pro	Gln
145					150					155					160
Leu	Cys	Tyr	Gln	Asp	Thr	Ile	Leu	Trp	Lys	Asp	Ile	Phe	His	Lys	Asn
				165					170					175	
Asn	Gln	Leu	Ala	Leu	Thr	Leu	Ile	Asp	Thr	Asn	Arg	Ser	Arg	Ala	Cys
			180					185					190		
His	Pro	Cys	Ser	Pro	Met	Cys	Lys	Gly	Ser	Arg	Cys	Trp	Gly	Glu	Ser
		195					200					205			
Ser	Glu	Asp	Cys	Gln	Ser	Leu	Thr	Arg	Thr	Val	Cys	Ala	Gly	Gly	Cys
		210				215					220				
Ala	Arg	Cys	Lys	Gly	Pro	Leu	Pro	Thr	Asp	Cys	Cys	His	Glu	Gln	Cys
225					230				235						240
Ala	Ala	Gly	Cys	Thr	Gly	Pro	Lys	His	Ser	Asp	Cys	Leu	Ala	Cys	Leu
				245					250					255	
His	Phe	Asn	His	Ser	Gly	Ile	Cys	Glu	Leu	His	Cys	Pro	Ala	Leu	Val
			260					265					270		
Thr	Tyr	Asn	Thr	Asp	Thr	Phe	Glu	Ser	Met	Pro	Asn	Pro	Glu	Gly	Arg
		275					280					285			
Tyr	Thr	Phe	Gly	Ala	Ser	Cys	Val	Thr	Ala	Cys	Pro	Tyr	Asn	Tyr	Leu
		290				295					300				
Ser	Thr	Asp	Val	Gly	Ser	Cys	Thr	Leu	Val	Cys	Pro	Leu	His	Asn	Gln
305					310					315					320
Glu	Val	Thr	Ala	Glu	Asp	Gly	Thr	Gln	Arg	Cys	Glu	Lys	Cys	Ser	Lys
				325					330					335	
Pro	Cys	Ala	Arg	Val	Cys	Tyr	Gly	Leu	Gly	Met	Glu	His	Leu	Arg	Glu
			340					345					350		
Val	Arg	Ala	Val	Thr	Ser	Ala	Asn	Ile	Gln	Glu	Phe	Ala	Gly	Cys	Lys
		355					360					365			
Lys	Ile	Phe	Gly	Ser	Leu	Ala	Phe	Leu	Pro	Glu	Ser	Phe	Asp	Gly	Asp
		370				375					380				
Pro	Ala	Ser	Asn	Thr	Ala	Pro	Leu	Gln	Pro	Glu	Gln	Leu	Gln	Val	Phe
385					390					395					400
Glu	Thr	Leu	Glu	Glu	Ile	Thr	Gly	Tyr	Leu	Tyr	Ile	Ser	Ala	Trp	Pro
				405				410						415	
Asp	Ser	Leu	Pro	Asp	Leu	Ser	Val	Phe	Gln	Asn	Leu	Gln	Val	Ile	Arg
			420					425					430		
Gly	Arg	Ile	Leu	His	Asn	Gly	Ala	Tyr	Ser	Leu	Thr	Leu	Gln	Gly	Leu
		435					440						445		



Gly	Ile	Ser	Trp	Leu	Gly	Leu	Arg	Ser	Leu	Arg	Glu	Leu	Gly	Ser	Gly	450	455	460
Leu	Ala	Leu	Ile	His	His	Asn	Thr	His	Leu	Cys	Phe	Val	His	Thr	Val	465	470	475
Pro	Trp	Asp	Gln	Leu	Phe	Arg	Asn	Pro	His	Gln	Ala	Leu	Leu	His	Thr	485	490	495
Ala	Asn	Arg	Pro	Glu	Asp	Glu	Cys	Val	Gly	Glu	Gly	Leu	Ala	Cys	His	500	505	510
Gln	Leu	Cys	Ala	Arg	Gly	His	Cys	Trp	Gly	Pro	Gly	Pro	Thr	Gln	Cys	515	520	525
Val	Asn	Cys	Ser	Gln	Phe	Leu	Arg	Gly	Gln	Glu	Cys	Val	Glu	Glu	Cys	530	535	540
Arg	Val	Leu	Gln	Gly	Leu	Pro	Arg	Glu	Tyr	Val	Asn	Ala	Arg	His	Cys	545	550	555
Leu	Pro	Cys	His	Pro	Glu	Cys	Gln	Pro	Gln	Asn	Gly	Ser	Val	Thr	Cys	565	570	575
Phe	Gly	Pro	Glu	Ala	Asp	Gln	Cys	Val	Ala	Cys	Ala	His	Tyr	Lys	Asp	580	585	590
Pro	Pro	Phe	Cys	Val	Ala	Arg	Cys	Pro	Ser	Gly	Val	Lys	Pro	Asp	Leu	595	600	605
Ser	Tyr	Met	Pro	Ile	Trp	Lys	Phe	Pro	Asp	Glu	Glu	Gly	Ala	Cys	Gln	610	615	620
Pro	Cys	Pro	Ile	Asn	Cys	Thr	His	Ser	Cys	Val	Asp	Leu	Asp	Asp	Lys	625	630	635
Gly	Cys	Pro	Ala	Glu	Gln	Arg	Ala	Ser	Pro	Leu	Thr	Ser	Ile	Ile	Ser	645	650	655
Ala	Val	Val	Gly	Ile	Leu	Leu	Val	Val	Val	Leu	Gly	Val	Val	Phe	Gly	660	665	670
Ile	Leu	Ile	Lys	Arg	Arg	Gln	Gln	Lys	Ile	Arg	Lys	Tyr	Thr	Met	Arg	675	680	685
Arg	Leu	Leu	Gln	Glu	Thr	Glu	Leu	Val	Glu	Pro	Leu	Thr	Pro	Ser	Gly	690	695	700
Ala	Met	Pro	Asn	Gln	Ala	Gln	Met	Arg	Ile	Leu	Lys	Glu	Thr	Glu	Leu	705	710	715
Arg	Lys	Val	Lys	Val	Leu	Gly	Ser	Gly	Ala	Phe	Gly	Thr	Val	Tyr	Lys	725	730	735
Gly	Ile	Trp	Ile	Pro	Asp	Gly	Glu	Asn	Val	Lys	Ile	Pro	Val	Ala	Ile	740	745	750
Lys	Val	Leu	Arg	Glu	Asn	Thr	Ser	Pro	Lys	Ala	Asn	Lys	Glu	Ile	Leu	755	760	765
Asp	Glu	Ala	Tyr	Val	Met	Ala	Gly	Val	Gly	Ser	Pro	Tyr	Val	Ser	Arg	770	775	780
Leu	Leu	Gly	Ile	Cys	Leu	Thr	Ser	Thr	Val	Gln	Leu	Val	Thr	Gln	Leu	785	790	795
Met	Pro	Tyr	Gly	Cys	Leu	Leu	Asp	His	Val	Arg	Glu	Asn	Arg	Gly	Arg	805	810	815
Leu	Gly	Ser	Gln	Asp	Leu	Leu	Asn	Trp	Cys	Met	Gln	Ile	Ala	Lys	Gly	820	825	830
Met	Ser	Tyr	Leu	Glu	Asp	Val	Arg	Leu	Val	His	Arg	Asp	Leu	Ala	Ala	835	840	845
Arg	Asn	Val	Leu	Val	Lys	Ser	Pro	Asn	His	Val	Lys	Ile	Thr	Asp	Phe	850	855	860
Gly	Leu	Ala	Arg	Leu	Leu	Asp	Ile	Asp	Glu	Thr	Glu	Tyr	His	Ala	Asp	865	870	875
																		880

Gly	Gly	Lys	Val	Pro	Ile	Lys	Trp	Met	Ala	Leu	Glu	Ser	Ile	Leu	Arg	
				885					890					895		
Arg	Arg	Phe	Thr	His	Gln	Ser	Asp	Val	Trp	Ser	Tyr	Gly	Val	Thr	Val	
			900					905					910			
Trp	Glu	Leu	Met	Thr	Phe	Gly	Ala	Lys	Pro	Tyr	Asp	Gly	Ile	Pro	Ala	
		915					920					925				
Arg	Glu	Ile	Pro	Asp	Leu	Leu	Glu	Lys	Gly	Glu	Arg	Leu	Pro	Gln	Pro	
	930					935					940					
Pro	Ile	Cys	Thr	Ile	Asp	Val	Tyr	Met	Ile	Met	Val	Lys	Cys	Trp	Met	
945					950					955					960	
Ile	Asp	Ser	Glu	Cys	Arg	Pro	Arg	Phe	Arg	Glu	Leu	Val	Ser	Glu	Phe	
				965					970					975		
Ser	Arg	Met	Ala	Arg	Asp	Pro	Gln	Arg	Phe	Val	Val	Ile	Gln	Asn	Glu	
			980						985				990			
Asp	Leu	Gly	Pro	Ala	Ser	Pro	Leu	Asp	Ser	Thr	Phe	Tyr	Arg	Ser	Leu	
		995					1000					1005				
Leu	Glu	Asp	Asp	Asp	Met	Gly	Asp	Leu	Val	Asp	Ala	Glu	Glu	Tyr	Leu	
	1010					1015					1020					
Val	Pro	Gln	Gln	Gly	Phe	Phe	Cys	Pro	Asp	Pro	Ala	Pro	Gly	Ala	Gly	
1025					1030					1035					1040	
Gly	Met	Val	His	His	Arg	His	Arg	Ser	Ser	Ser	Thr	Arg	Ser	Gly	Gly	
				1045					1050					1055		
Gly	Asp	Leu	Thr	Leu	Gly	Leu	Glu	Pro	Ser	Glu	Glu	Glu	Ala	Pro	Arg	
			1060					1065					1070			
Ser	Pro	Leu	Ala	Pro	Ser	Glu	Gly	Ala	Gly	Ser	Asp	Val	Phe	Asp	Gly	
		1075					1080					1085				
Asp	Leu	Gly	Met	Gly	Ala	Ala	Lys	Gly	Leu	Gln	Ser	Leu	Pro	Thr	His	
	1090					1095					1100					
Asp	Pro	Ser	Pro	Leu	Gln	Arg	Tyr	Ser	Glu	Asp	Pro	Thr	Val	Pro	Leu	
1105					1110					1115					1120	
Pro	Ser	Glu	Thr	Asp	Gly	Tyr	Val	Ala	Pro	Leu	Thr	Cys	Ser	Pro	Gln	
				1125					1130						1135	
Pro	Glu	Tyr	Val	Asn	Gln	Pro	Asp	Val	Arg	Pro	Gln	Pro	Pro	Ser	Pro	
			1140					1145					1150			
Arg	Glu	Gly	Pro	Leu	Pro	Ala	Ala	Arg	Pro	Ala	Gly	Ala	Thr	Leu	Glu	
		1155					1160					1165				
Arg	Pro	Lys	Thr	Leu	Ser	Pro	Gly	Lys	Asn	Gly	Val	Val	Lys	Asp	Val	
	1170					1175					1180					
Phe	Ala	Phe	Gly	Gly	Ala	Val	Glu	Asn	Pro	Glu	Tyr	Leu	Thr	Pro	Gln	
1185					1190					1195					1200	
Gly	Gly	Ala	Ala	Pro	Gln	Pro	His	Pro	Pro	Pro	Ala	Phe	Ser	Pro	Ala	
				1205					1210					1215		
Phe	Asp	Asn	Leu	Tyr	Tyr	Trp	Asp	Gln	Asp	Pro	Pro	Glu	Arg	Gly	Ala	
			1220					1225					1230			
Pro	Pro	Ser	Thr	Phe	Lys	Gly	Thr	Pro	Thr	Ala	Glu	Asn	Pro	Glu	Tyr	
		1235					1240					1245				
Leu	Gly	Leu	Asp	Val	Pro	Val										
	1250					1255										

<210> 24  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HLA-A2 anchor motif

<220>  
 <221> MOD\_RES  
 <222> (3)...(8)  
 <223> Xaa = any amino acid

<400> 24  
 Phe Leu Xaa Xaa Xaa Xaa Xaa Xaa Val  
 1 5

<210> 25  
 <211> 875  
 <212> PRT  
 <213> Clostridium tetani

<220>  
 <223> tetanus toxin (tetX)

<400> 25  
 Lys Ile Ile Pro Pro Thr Asn Ile Arg Glu Asn Leu Tyr Asn Arg Thr  
 1 5 10 15  
 Ala Ser Leu Thr Asp Leu Gly Gly Glu Leu Cys Ile Lys Ile Lys Asn  
 20 25 30  
 Glu Asp Leu Thr Phe Ile Ala Glu Lys Asn Ser Phe Ser Glu Glu Pro  
 35 40 45  
 Phe Gln Asp Glu Ile Val Ser Tyr Asn Thr Lys Asn Lys Pro Leu Asn  
 50 55 60  
 Phe Asn Tyr Ser Leu Asp Lys Ile Ile Val Asp Tyr Asn Leu Gln Ser  
 65 70 75 80  
 Lys Ile Thr Leu Pro Asn Asp Arg Thr Thr Pro Val Thr Lys Gly Ile  
 85 90 95  
 Pro Tyr Ala Pro Glu Tyr Lys Ser Asn Ala Ala Ser Thr Ile Glu Ile  
 100 105 110  
 His Asn Ile Asp Asp Asn Thr Ile Tyr Gln Tyr Leu Tyr Ala Gln Lys  
 115 120 125  
 Ser Pro Thr Thr Leu Gln Arg Ile Thr Met Thr Asn Ser Val Asp Asp  
 130 135 140  
 Ala Leu Ile Asn Ser Thr Lys Ile Tyr Ser Tyr Phe Pro Ser Val Ile  
 145 150 155 160  
 Ser Lys Val Asn Gln Gly Ala Gln Gly Ile Leu Phe Leu Gln Trp Val  
 165 170 175  
 Arg Asp Ile Ile Asp Asp Phe Thr Asn Glu Ser Ser Gln Lys Thr Thr  
 180 185 190  
 Ile Asp Lys Ile Ser Asp Val Ser Thr Ile Val Pro Tyr Ile Gly Pro  
 195 200 205  
 Ala Leu Asn Ile Val Lys Gln Gly Tyr Glu Gly Asn Phe Ile Gly Ala  
 210 215 220  
 Leu Glu Thr Thr Gly Val Val Leu Leu Leu Glu Tyr Ile Pro Glu Ile  
 225 230 235 240  
 Thr Leu Pro Val Ile Ala Ala Leu Ser Ile Ala Glu Ser Ser Thr Gln

				245					250					255			
Lys	Glu	Lys	Ile	Ile	Lys	Thr	Ile	Asp	Asn	Phe	Leu	Glu	Lys	Arg	Tyr		
			260					265					270				
Glu	Lys	Trp	Ile	Glu	Val	Tyr	Lys	Leu	Val	Lys	Ala	Lys	Trp	Leu	Gly		
		275					280					285					
Thr	Val	Asn	Thr	Gln	Phe	Gln	Lys	Arg	Ser	Tyr	Gln	Met	Tyr	Arg	Ser		
	290					295					300						
Leu	Glu	Tyr	Gln	Val	Asp	Ala	Ile	Lys	Lys	Ile	Ile	Asp	Tyr	Glu	Tyr		
305					310					315					320		
Lys	Ile	Tyr	Ser	Gly	Pro	Asp	Lys	Glu	Gln	Ile	Ala	Asp	Glu	Ile	Asn		
				325				330						335			
Asn	Leu	Lys	Asn	Lys	Leu	Glu	Glu	Lys	Ala	Asn	Lys	Ala	Met	Ile	Asn		
			340					345					350				
Ile	Asn	Ile	Phe	Met	Arg	Glu	Ser	Ser	Arg	Ser	Phe	Leu	Val	Asn	Gln		
		355					360					365					
Met	Ile	Asn	Glu	Ala	Lys	Lys	Gln	Leu	Leu	Glu	Phe	Asp	Thr	Gln	Ser		
	370					375					380						
Lys	Asn	Ile	Leu	Met	Gln	Tyr	Ile	Lys	Ala	Asn	Ser	Lys	Phe	Ile	Gly		
385					390				395						400		
Ile	Thr	Glu	Leu	Lys	Lys	Leu	Glu	Ser	Lys	Ile	Asn	Lys	Val	Phe	Ser		
				405				410						415			
Thr	Pro	Ile	Pro	Phe	Ser	Tyr	Ser	Lys	Asn	Leu	Asp	Cys	Trp	Val	Asp		
			420					425					430				
Asn	Glu	Glu	Asp	Ile	Asp	Val	Ile	Leu	Lys	Lys	Ser	Thr	Ile	Leu	Asn		
		435					440					445					
Leu	Asp	Ile	Asn	Asn	Asp	Ile	Ile	Ser	Asp	Ile	Ser	Gly	Phe	Asn	Ser		
	450					455					460						
Ser	Val	Ile	Thr	Tyr	Pro	Asp	Ala	Gln	Leu	Val	Pro	Gly	Ile	Asn	Gly		
465					470				475						480		
Lys	Ala	Ile	His	Leu	Val	Asn	Asn	Glu	Ser	Ser	Glu	Val	Ile	Val	His		
				485				490						495			
Lys	Ala	Met	Asp	Ile	Glu	Tyr	Asn	Asp	Met	Phe	Asn	Asn	Phe	Thr	Val		
			500					505					510				
Ser	Phe	Trp	Leu	Arg	Val	Pro	Lys	Val	Ser	Ala	Ser	His	Leu	Glu	Gln		
		515					520					525					
Tyr	Gly	Thr	Asn	Glu	Tyr	Ser	Ile	Ile	Ser	Ser	Met	Lys	Lys	His	Ser		
	530					535					540						
Leu	Ser	Ile	Gly	Ser	Gly	Trp	Ser	Val	Ser	Leu	Lys	Gly	Asn	Asn	Leu		
545					550					555					560		
Ile	Trp	Thr	Leu	Lys	Asp	Ser	Ala	Gly	Glu	Val	Arg	Gln	Ile	Thr	Phe		
				565				570						575			
Arg	Asp	Leu	Pro	Asp	Lys	Phe	Asn	Ala	Tyr	Leu	Ala	Asn	Lys	Trp	Val		
			580					585					590				
Phe	Ile	Thr	Ile	Thr	Asn	Asp	Arg	Leu	Ser	Ser	Ala	Asn	Leu	Tyr	Ile		
		595				600						605					
Asn	Gly	Val	Leu	Met	Gly	Ser	Ala	Glu	Ile	Thr	Gly	Leu	Gly	Ala	Ile		
	610					615					620						
Arg	Glu	Asp	Asn	Asn	Ile	Thr	Leu	Lys	Leu	Asp	Arg	Cys	Asn	Asn	Asn		
625					630					635					640		
Asn	Gln	Tyr	Val	Ser	Ile	Asp	Lys	Phe	Arg	Ile	Phe	Cys	Lys	Ala	Leu		
				645				650						655			
Asn	Pro	Lys	Glu	Ile	Glu	Lys	Leu	Tyr	Thr	Ser	Tyr	Leu	Ser	Ile	Thr		
			660					665					670				
Phe	Leu	Arg	Asp	Phe	Trp	Gly	Asn	Pro	Leu	Arg	Tyr	Asp	Thr	Glu	Tyr		



		35					40				45								
Thr	Gln	Asp	Phe	Trp	Glu	Val	Gln	Leu	Gly	Ile	Pro	His	Pro	Ala	Gly				
	50						55				60								
Leu	Lys	Lys	Lys	Lys	Ser	Val	Thr	Val	Leu	Asp	Val	Gly	Asp	Ala	Tyr				
65					70					75				80					
Phe	Ser	Val	Pro	Leu	Asp	Lys	Asp	Phe	Arg	Lys	Tyr	Thr	Ala	Phe	Thr				
				85				90						95					
Ile	Pro	Ser	Thr	Asn	Asn	Glu	Thr	Pro	Gly	Ile	Arg	Tyr	Gln	Tyr	Asn				
			100					105					110						
Val	Leu	Pro	Gln	Gly	Trp	Lys	Gly	Ser	Pro	Ala	Ile	Phe	Gln	Ser	Ser				
		115					120					125							
Met	Thr	Lys	Ile	Leu	Glu	Pro	Phe	Arg	Lys	Gln	Asn	Pro	Glu	Ile	Val				
	130					135					140								
Ile	Tyr	Gln	Tyr	Met	Asp	Asp	Leu	Tyr	Ile	Gly	Ser	Asp	Leu	Glu	Ile				
145				150					155					160					
Gly	Gln	His	Arg	Thr	Lys	Ile	Glu	Glu	Leu	Arg	Gln	His	Leu	Leu	Lys				
				165				170						175					
Trp	Gly	Leu	Thr	Thr	Pro	Asp	Lys	Lys	His	Gln	Lys	Glu	Pro						
			180					185					190						

<210> 28  
 <211> 20  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> universal T helper epitope

<400> 28  
 Phe Arg Lys Gln Asn Pro Asp Ile Val Ile Tyr Gln Tyr Met Asp Asp  
 1 5 10 15  
 Leu Tyr Val Gly  
 20

<210> 29  
 <211> 236  
 <212> PRT  
 <213> Human immunodeficiency virus type 1

<220>  
 <223> HIV-1 gag protein

<400> 29  
 Trp Asp Arg Leu His Pro Ala Gln Ala Gly Pro Ile Ala Pro Gly Gln  
 1 5 10 15  
 Ile Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr Ser Thr Leu  
 20 25 30  
 Gln Glu Gln Ile Thr Trp Met Thr Asn Asn Pro Pro Ile Pro Val Gly  
 35 40 45  
 Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg  
 50 55 60  
 Met Tyr Ser Pro Val Ser Ile Leu Asp Ile Lys Gln Gly Pro Lys Glu

65					70					75				80
Pro	Phe	Arg	Asp	Tyr	Val	Asp	Arg	Phe	Phe	Lys	Ala	Leu	Arg	Ala
			85						90				95	
Gln	Ala	Thr	Gln	Asp	Val	Lys	Asn	Trp	Met	Thr	Asp	Thr	Leu	Leu
			100					105					110	Val
Gln	Asn	Ala	Asn	Pro	Asp	Cys	Lys	Ser	Ile	Leu	Arg	Gly	Leu	Gly
		115					120					125		Pro
Gly	Ala	Ser	Leu	Glu	Glu	Met	Met	Thr	Ala	Cys	Gln	Gly	Val	Gly
	130					135					140			Gly
Pro	Ser	His	Lys	Ala	Arg	Val	Leu	Ala	Glu	Ala	Met	Ser	Gln	Ala
145					150					155				Asn
Ser	Val	Asn	Met	Met	Gln	Arg	Ser	Asn	Phe	Lys	Gly	Pro	Lys	Arg
			165					170					175	Thr
Val	Lys	Cys	Phe	Asn	Cys	Gly	Lys	Glu	Gly	His	Ile	Ala	Arg	Asn
			180					185					190	Cys
Arg	Ala	Pro	Arg	Lys	Lys	Gly	Cys	Trp	Lys	Cys	Gly	Gln	Glu	Gly
	195					200						205		His
Gln	Met	Lys	Asp	Cys	Thr	Glu	Arg	Gln	Ala	Asn	Phe	Leu	Gly	Lys
	210					215				220				Ile
Trp	Pro	Ser	His	Lys	Gly	Arg	Pro	Gly	Asn	Phe	Leu			
225					230					235				

<210> 30

<211> 110

<212> PRT

<213> Homo sapiens

<220>

<223> preproinsulin, insulin (INS) precursor

<400> 30

Met	Ala	Leu	Trp	Met	Arg	Leu	Leu	Pro	Leu	Leu	Ala	Leu	Leu	Ala	Leu
1				5				10						15	
Trp	Gly	Pro	Asp	Pro	Ala	Ala	Ala	Phe	Val	Asn	Gln	His	Leu	Cys	Gly
			20					25					30		
Ser	His	Leu	Val	Glu	Ala	Leu	Tyr	Leu	Val	Cys	Gly	Glu	Arg	Gly	Phe
		35					40					45			
Phe	Tyr	Thr	Pro	Lys	Thr	Arg	Arg	Glu	Ala	Glu	Asp	Leu	Gln	Val	Gly
	50					55					60				
Gln	Val	Glu	Leu	Gly	Gly	Gly	Pro	Gly	Ala	Gly	Ser	Leu	Gln	Pro	Leu
65					70					75					80
Ala	Leu	Glu	Gly	Ser	Leu	Gln	Lys	Arg	Gly	Ile	Val	Glu	Gln	Cys	Cys
				85					90					95	
Thr	Ser	Ile	Cys	Ser	Leu	Tyr	Gln	Leu	Glu	Asn	Tyr	Cys	Asn		
			100					105					110		

<210> 31

<211> 585

<212> PRT

<213> Homo sapiens

<220>

<223> glutamic acid decarboxylase 2 (GAD2), 65kDa  
isoform (GAD65)

<400> 31

Met	Ala	Ser	Pro	Gly	Ser	Gly	Phe	Trp	Ser	Phe	Gly	Ser	Glu	Asp	Gly	1	5	10	15
Ser	Gly	Asp	Ser	Glu	Asn	Pro	Gly	Thr	Ala	Arg	Ala	Trp	Cys	Gln	Val	20	25	30	
Ala	Gln	Lys	Phe	Thr	Gly	Gly	Ile	Gly	Asn	Lys	Leu	Cys	Ala	Leu	Leu	35	40	45	
Tyr	Gly	Asp	Ala	Glu	Lys	Pro	Ala	Glu	Ser	Gly	Gly	Ser	Gln	Pro	Pro	50	55	60	
Arg	Ala	Ala	Ala	Arg	Lys	Ala	Ala	Cys	Ala	Cys	Asp	Gln	Lys	Pro	Cys	65	70	75	80
Ser	Cys	Ser	Lys	Val	Asp	Val	Asn	Tyr	Ala	Phe	Leu	His	Ala	Thr	Asp	85	90	95	
Leu	Leu	Pro	Ala	Cys	Asp	Gly	Glu	Arg	Pro	Thr	Leu	Ala	Phe	Leu	Gln	100	105	110	
Asp	Val	Met	Asn	Ile	Leu	Leu	Gln	Tyr	Val	Val	Lys	Ser	Phe	Asp	Arg	115	120	125	
Ser	Thr	Lys	Val	Ile	Asp	Phe	His	Tyr	Pro	Asn	Glu	Leu	Leu	Gln	Glu	130	135	140	
Tyr	Asn	Trp	Glu	Leu	Ala	Asp	Gln	Pro	Gln	Asn	Leu	Glu	Glu	Ile	Leu	145	150	155	160
Met	His	Cys	Gln	Thr	Thr	Leu	Lys	Tyr	Ala	Ile	Lys	Thr	Gly	His	Pro	165	170	175	
Arg	Tyr	Phe	Asn	Gln	Leu	Ser	Thr	Gly	Leu	Asp	Met	Val	Gly	Leu	Ala	180	185	190	
Ala	Asp	Trp	Leu	Thr	Ser	Thr	Ala	Asn	Thr	Asn	Met	Phe	Thr	Tyr	Glu	195	200	205	
Ile	Ala	Pro	Val	Phe	Val	Leu	Leu	Glu	Tyr	Val	Thr	Leu	Lys	Lys	Met	210	215	220	
Arg	Glu	Ile	Ile	Gly	Trp	Pro	Gly	Gly	Ser	Gly	Asp	Gly	Ile	Phe	Ser	225	230	235	240
Pro	Gly	Gly	Ala	Ile	Ser	Asn	Met	Tyr	Ala	Met	Met	Ile	Ala	Arg	Phe	245	250	255	
Lys	Met	Phe	Pro	Glu	Val	Lys	Glu	Lys	Gly	Met	Ala	Ala	Leu	Pro	Arg	260	265	270	
Leu	Ile	Ala	Phe	Thr	Ser	Glu	His	Ser	His	Phe	Ser	Leu	Lys	Lys	Gly	275	280	285	
Ala	Ala	Ala	Leu	Gly	Ile	Gly	Thr	Asp	Ser	Val	Ile	Leu	Ile	Lys	Cys	290	295	300	
Asp	Glu	Arg	Gly	Lys	Met	Ile	Pro	Ser	Asp	Leu	Glu	Arg	Arg	Ile	Leu	305	310	315	320
Glu	Ala	Lys	Gln	Lys	Gly	Phe	Val	Pro	Phe	Leu	Val	Ser	Ala	Thr	Ala	325	330	335	
Gly	Thr	Thr	Val	Tyr	Gly	Ala	Phe	Asp	Pro	Leu	Leu	Ala	Val	Ala	Asp	340	345	350	
Ile	Cys	Lys	Lys	Tyr	Lys	Ile	Trp	Met	His	Val	Asp	Ala	Ala	Trp	Gly	355	360	365	
Gly	Gly	Leu	Leu	Met	Ser	Arg	Lys	His	Lys	Trp	Lys	Leu	Ser	Gly	Val	370	375	380	
Glu	Arg	Ala	Asn	Ser	Val	Thr	Trp	Asn	Pro	His	Lys	Met	Met	Gly	Val	385	390	395	400



Pro	Leu	Gln	Cys	Ser	Ala	Leu	Leu	Val	Arg	Glu	Glu	Gly	Leu	Met	Gln	
				405					410					415		
Asn	Cys	Asn	Gln	Met	His	Ala	Ser	Tyr	Leu	Phe	Gln	Gln	Asp	Lys	His	
			420					425					430			
Tyr	Asp	Leu	Ser	Tyr	Asp	Thr	Gly	Asp	Lys	Ala	Leu	Gln	Cys	Gly	Arg	
		435					440					445				
His	Val	Asp	Val	Phe	Lys	Leu	Trp	Leu	Met	Trp	Arg	Ala	Lys	Gly	Thr	
		450				455					460					
Thr	Gly	Phe	Glu	Ala	His	Val	Asp	Lys	Cys	Leu	Glu	Leu	Ala	Glu	Tyr	
465					470					475					480	
Leu	Tyr	Asn	Ile	Ile	Lys	Asn	Arg	Glu	Gly	Tyr	Glu	Met	Val	Phe	Asp	
			485					490						495		
Gly	Lys	Pro	Gln	His	Thr	Asn	Val	Cys	Phe	Trp	Tyr	Ile	Pro	Pro	Ser	
			500					505					510			
Leu	Arg	Thr	Leu	Glu	Asp	Asn	Glu	Glu	Arg	Met	Ser	Arg	Leu	Ser	Lys	
		515					520					525				
Val	Ala	Pro	Val	Ile	Lys	Ala	Arg	Met	Met	Glu	Tyr	Gly	Thr	Thr	Met	
	530					535					540					
Val	Ser	Tyr	Gln	Pro	Leu	Gly	Asp	Lys	Val	Asn	Phe	Phe	Arg	Met	Val	
545				550						555					560	
Ile	Ser	Asn	Pro	Ala	Ala	Thr	His	Gln	Asp	Ile	Asp	Phe	Leu	Ile	Glu	
			565					570						575		
Glu	Ile	Glu	Arg	Leu	Gly	Gln	Asp	Leu								
			580					585								

<210> 32

<211> 74

<212> PRT

<213> Artificial Sequence

<220>

<223> composite self epitope Insulin-GAD

<220>

<221> MOD\_RES

<222> (1)...(74)

<223> Xaa = any amino acid

<400> 32

Cys	Gly	Ser	His	Leu	Val	Glu	Ala	Leu	Tyr	Leu	Val	Cys	Gly	Glu	Arg	
1				5				10						15		
Gly	Xaa	Xaa	Xaa	Xaa	Pro	Arg	Leu	Ile	Ala	Phe	Thr	Ser	Glu	His	Ser	
			20					25					30			
His	Phe	Ser	Leu	Xaa	Xaa	Xaa	Xaa	Leu	Tyr	Asn	Ile	Ile	Lys	Asn	Arg	
		35				40						45				
Glu	Gly	Tyr	Glu	Met	Val	Phe	Xaa	Xaa	Xaa	Xaa	Pro	Ser	Leu	Arg	Thr	
	50				55						60					
Leu	Glu	Asp	Asn	Glu	Glu	Arg	Met	Ser	Arg							
65					70											

<210> 33

<211> 54

<212> PRT  
 <213> Artificial Sequence

<220>  
 <223> composite non-self epitope Tetanus-gp100, MART-1,  
 TRP-2

<220>  
 <221> MOD\_RES  
 <222> (1)...(54)  
 <223> Xaa = any amino acid

<400> 33  
 Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Phe Leu Asp Gln Val Ala Phe Ser Val Xaa Xaa Xaa Xaa  
 20 25 30  
 Ala Ala Gly Ile Gly Ile Leu Thr Val Xaa Xaa Xaa Xaa Ser Val Arg  
 35 40 45  
 Asp Thr Leu Leu Gly Gly  
 50

<210> 34  
 <211> 146  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> prostate associated gene 1 (PAGE-1), P antigen  
 family, member 1 (prostate associated), isoform  
 CRA\_b, G antigen family B, member 1 (GAGEB1,  
 GAGE9)

<400> 34  
 Met Gly Phe Leu Arg Arg Leu Ile Tyr Arg Arg Arg Pro Met Ile Tyr  
 1 5 10 15  
 Val Glu Ser Ser Glu Glu Ser Ser Asp Glu Gln Pro Asp Glu Val Glu  
 20 25 30  
 Ser Pro Thr Gln Ser Gln Asp Ser Thr Pro Ala Glu Glu Arg Glu Asp  
 35 40 45  
 Glu Gly Ala Ser Ala Ala Gln Gly Gln Glu Pro Glu Ala Asp Ser Gln  
 50 55 60  
 Glu Leu Val Gln Pro Lys Thr Gly Cys Glu Pro Gly Asp Gly Pro Asp  
 65 70 75 80  
 Thr Lys Arg Val Cys Leu Arg Asn Glu Glu Gln Met Lys Leu Pro Ala  
 85 90 95  
 Glu Gly Pro Glu Pro Glu Ala Asp Ser Gln Glu Gln Val His Pro Lys  
 100 105 110  
 Thr Gly Cys Glu Arg Gly Asp Gly Pro Asp Val Gln Glu Leu Gly Leu  
 115 120 125  
 Pro Asn Pro Glu Glu Val Lys Thr Pro Glu Glu Asp Glu Gly Gln Ser  
 130 135 140  
 Gln Pro

145

<210> 35  
 <211> 339  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> six transmembrane epithelial antigen of the  
 prostate (STEAP1), metalloredutase STEAP1, six  
 transmembrane protein of the prostate 1 (STAMP1)

<400> 35  
 Met Glu Ser Arg Lys Asp Ile Thr Asn Gln Glu Glu Leu Trp Lys Met  
 1 5 10 15  
 Lys Pro Arg Arg Asn Leu Glu Glu Asp Asp Tyr Leu His Lys Asp Thr  
 20 25 30  
 Gly Glu Thr Ser Met Leu Lys Arg Pro Val Leu Leu His Leu His Gln  
 35 40 45  
 Thr Ala His Ala Asp Glu Phe Asp Cys Pro Ser Glu Leu Gln His Thr  
 50 55 60  
 Gln Glu Leu Phe Pro Gln Trp His Leu Pro Ile Lys Ile Ala Ala Ile  
 65 70 75 80  
 Ile Ala Ser Leu Thr Phe Leu Tyr Thr Leu Leu Arg Glu Val Ile His  
 85 90 95  
 Pro Leu Ala Thr Ser His Gln Gln Tyr Phe Tyr Lys Ile Pro Ile Leu  
 100 105 110  
 Val Ile Asn Lys Val Leu Pro Met Val Ser Ile Thr Leu Leu Ala Leu  
 115 120 125  
 Val Tyr Leu Pro Gly Val Ile Ala Ala Ile Val Gln Leu His Asn Gly  
 130 135 140  
 Thr Lys Tyr Lys Lys Phe Pro His Trp Leu Asp Lys Trp Met Leu Thr  
 145 150 155 160  
 Arg Lys Gln Phe Gly Leu Leu Ser Phe Phe Phe Ala Val Leu His Ala  
 165 170 175  
 Ile Tyr Ser Leu Ser Tyr Pro Met Arg Arg Ser Tyr Arg Tyr Lys Leu  
 180 185 190  
 Leu Asn Trp Ala Tyr Gln Gln Val Gln Gln Asn Lys Glu Asp Ala Trp  
 195 200 205  
 Ile Glu His Asp Val Trp Arg Met Glu Ile Tyr Val Ser Leu Gly Ile  
 210 215 220  
 Val Gly Leu Ala Ile Leu Ala Leu Leu Ala Val Thr Ser Ile Pro Ser  
 225 230 235 240  
 Val Ser Asp Ser Leu Thr Trp Arg Glu Phe His Tyr Ile Gln Ser Lys  
 245 250 255  
 Leu Gly Ile Val Ser Leu Leu Leu Gly Thr Ile His Ala Leu Ile Phe  
 260 265 270  
 Ala Trp Asn Lys Trp Ile Asp Ile Lys Gln Phe Val Trp Tyr Thr Pro  
 275 280 285  
 Pro Thr Phe Met Ile Ala Val Phe Leu Pro Ile Val Val Leu Ile Phe  
 290 295 300  
 Lys Ser Ile Leu Phe Leu Pro Cys Leu Arg Lys Lys Ile Leu Lys Ile  
 305 310 315 320

Arg His Gly Trp Glu Asp Val Thr Lys Ile Asn Lys Thr Glu Ile Cys  
 325 330 335  
 Ser Gln Leu

<210> 36  
 <211> 102  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> G antigen, family C, member 1, prostate-associated  
 gene protein 4 (PAGE4), JM27 protein

<400> 36  
 Met Ser Ala Arg Val Arg Ser Arg Ser Arg Gly Arg Gly Asp Gly Gln  
 1 5 10 15  
 Glu Ala Pro Asp Val Val Ala Phe Val Ala Pro Gly Glu Ser Gln Gln  
 20 25 30  
 Glu Glu Pro Pro Thr Asp Asn Gln Asp Ile Glu Pro Gly Gln Glu Arg  
 35 40 45  
 Glu Gly Thr Pro Pro Ile Glu Glu Arg Lys Val Glu Gly Asp Cys Gln  
 50 55 60  
 Glu Met Asp Leu Glu Lys Thr Arg Ser Glu Arg Gly Asp Gly Ser Asp  
 65 70 75 80  
 Val Lys Glu Lys Thr Pro Pro Asn Pro Lys His Ala Lys Thr Lys Glu  
 85 90 95  
 Ala Gly Asp Gly Gln Pro  
 100

<210> 37  
 <211> 273  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> mucin 1, transmembrane, isoform 1 precursor (MUC1),  
 peanut-reactive urinary mucin, episialin, polymorphic  
 epithelial mucin, tumor associated epithelial mucin, breast  
 carcinoma-associated antigen DF3, H23 antigen

<400> 37  
 Met Thr Pro Gly Thr Gln Ser Pro Phe Phe Leu Leu Leu Leu Thr  
 1 5 10 15  
 Val Leu Thr Val Val Thr Gly Ser Gly His Ala Ser Ser Thr Pro Gly  
 20 25 30  
 Gly Glu Lys Glu Thr Ser Ala Thr Gln Arg Ser Ser Val Pro Ser Ser  
 35 40 45  
 Thr Glu Lys Asn Ala Leu Ser Thr Gly Val Ser Phe Phe Phe Leu Ser  
 50 55 60  
 Phe His Ile Ser Asn Leu Gln Phe Asn Ser Ser Leu Glu Asp Pro Ser  
 65 70 75 80  
 Thr Asp Tyr Tyr Gln Glu Leu Gln Arg Asp Ile Ser Glu Met Phe Leu

				85					90					95			
Gln	Ile	Tyr	Lys	Gln	Gly	Gly	Phe	Leu	Gly	Leu	Ser	Asn	Ile	Lys	Phe		
			100					105					110				
Arg	Pro	Gly	Ser	Val	Val	Val	Gln	Leu	Thr	Leu	Ala	Phe	Arg	Glu	Gly		
		115					120					125					
Thr	Ile	Asn	Val	His	Asp	Val	Glu	Thr	Gln	Phe	Asn	Gln	Tyr	Lys	Thr		
	130					135					140						
Glu	Ala	Ala	Ser	Arg	Tyr	Asn	Leu	Thr	Ile	Ser	Asp	Val	Ser	Val	Ser		
145				150						155				160			
Asp	Val	Pro	Phe	Pro	Phe	Ser	Ala	Gln	Ser	Gly	Ala	Gly	Val	Pro	Gly		
			165					170						175			
Trp	Gly	Ile	Ala	Leu	Leu	Val	Leu	Val	Cys	Val	Leu	Val	Ala	Leu	Ala		
		180					185						190				
Ile	Val	Tyr	Leu	Ile	Ala	Leu	Ala	Val	Cys	Gln	Cys	Arg	Arg	Lys	Asn		
	195					200						205					
Tyr	Gly	Gln	Leu	Asp	Ile	Phe	Pro	Ala	Arg	Asp	Thr	Tyr	His	Pro	Met		
	210					215					220						
Ser	Glu	Tyr	Pro	Thr	Tyr	His	Thr	His	Gly	Arg	Tyr	Val	Pro	Pro	Ser		
225				230						235				240			
Ser	Thr	Asp	Arg	Ser	Pro	Tyr	Glu	Lys	Val	Ser	Ala	Gly	Asn	Gly	Gly		
			245					250					255				
Ser	Ser	Leu	Ser	Tyr	Thr	Asn	Pro	Ala	Val	Ala	Ala	Thr	Ser	Ala	Asn		
		260						265					270				

Leu

<210> 38

<211> 263

<212> PRT

<213> Ovine respiratory syncytial virus

<220>

<223> Ovine RSV (ORSV) major surface glycoprotein G, attachment glycoprotein G, G glycoprotein

<400> 38

Met	Ser	Asn	His	Thr	His	His	Phe	Glu	Phe	Lys	Thr	Leu	Lys	Lys	Ala		
1				5				10						15			
Trp	Lys	Ala	Ser	Lys	Tyr	Phe	Ile	Val	Gly	Leu	Ser	Cys	Leu	Tyr	Lys		
		20					25						30				
Leu	Asn	Leu	Lys	Ser	Leu	Val	Gln	Met	Ala	Leu	Ser	Ala	Leu	Ala	Met		
	35					40					45						
Ile	Thr	Leu	Val	Ser	Leu	Thr	Ile	Thr	Ala	Ile	Ile	Tyr	Ile	Ser	Thr		
	50				55					60							
Gly	Asn	Thr	Lys	Ala	Lys	Pro	Met	Pro	Thr	Pro	Thr	Ile	Gln	Ile	Thr		
65				70				75					80				
Gln	Gln	Phe	Gln	Asn	His	Thr	Ser	Leu	Pro	Pro	Thr	Glu	His	Asn	His		
			85			90							95				
Asn	Ser	Thr	His	Ser	Pro	Thr	Gln	Gly	Thr	Thr	Ser	Pro	His	Thr	Phe		
		100				105						110					
Ala	Val	Asp	Val	Thr	Glu	Gly	Thr	Arg	Tyr	Tyr	His	Leu	Thr	Leu	Lys		
	115					120						125					
Thr	Gln	Gly	Gly	Lys	Thr	Lys	Gly	Pro	Pro	Thr	Pro	His	Ala	Thr	Arg		
	130					135					140						

Lys	Pro	Pro	Ile	Ser	Ser	Gln	Lys	Ser	Asn	Pro	Ser	Glu	Ile	Gln	Gln
145					150					155					160
Asp	Tyr	Ser	Asp	Phe	Gln	Ile	Leu	Pro	Tyr	Val	Pro	Cys	Asn	Ile	Cys
				165					170					175	
Glu	Gly	Asp	Ser	Ala	Cys	Leu	Ser	Leu	Cys	Gln	Asp	Arg	Ser	Glu	Ser
			180					185					190		
Ile	Leu	Asp	Lys	Ala	Leu	Thr	Thr	Thr	Pro	Lys	Lys	Thr	Pro	Lys	Pro
		195					200					205			
Met	Thr	Thr	Lys	Lys	Pro	Thr	Lys	Thr	Ser	Thr	His	His	Arg	Thr	Ser
	210					215					220				
Leu	Arg	Asn	Lys	Leu	Tyr	Ile	Lys	Thr	Asn	Met	Thr	Thr	Pro	Pro	His
225				230						235					240
Gly	Leu	Ile	Ser	Thr	Ala	Lys	His	Asn	Lys	Asn	Gln	Ser	Thr	Val	Gln
				245					250					255	
Asn	Pro	Arg	His	Thr	Leu	Ala									
			260												

<210> 39  
 <211> 192  
 <212> PRT  
 <213> Human respiratory syncytial virus

<220>  
 <223> HRSV attachment G glycoprotein

<400>	39														
Ala	Thr	Asp	Gln	Ile	Lys	Asn	Thr	Thr	Pro	Thr	Tyr	Leu	Thr	Gln	Asn
1				5					10					15	
Pro	Gln	Leu	Gly	Ile	Ser	Phe	Ser	Asn	Leu	Ser	Glu	Thr	Thr	Ser	Gln
			20					25					30		
Pro	Thr	Thr	Ile	Leu	Ala	Ser	Thr	Thr	Pro	Ser	Ala	Glu	Ser	Thr	Pro
		35					40					45			
Gln	Ser	Thr	Thr	Val	Lys	Ile	Lys	Asn	Thr	Thr	Thr	Thr	Gln	Ile	Gln
	50					55					60				
Pro	Ser	Lys	Pro	Thr	Thr	Lys	Gln	Arg	Gln	Asn	Lys	Pro	Gln	Asn	Lys
65				70						75					80
Pro	Asn	Asn	Asp	Phe	His	Phe	Glu	Val	Phe	Asn	Phe	Val	Pro	Cys	Ser
				85					90					95	
Ile	Cys	Ser	Asn	Asn	Pro	Thr	Cys	Trp	Ala	Ile	Cys	Lys	Arg	Ile	Pro
			100					105					110		
Asn	Lys	Lys	Pro	Gly	Lys	Lys	Thr	Thr	Thr	Lys	Pro	Thr	Lys	Lys	Pro
		115					120					125			
Thr	Ile	Lys	Thr	Thr	Lys	Lys	Asp	Pro	Lys	Pro	Gln	Thr	Thr	Lys	Pro
	130					135					140				
Lys	Glu	Val	Leu	Thr	Thr	Lys	Pro	Thr	Glu	Lys	Pro	Thr	Ile	Ser	Thr
145				150						155					160
Thr	Lys	Thr	Asn	Ile	Arg	Thr	Thr	Leu	Leu	Thr	Ser	Asn	Thr	Thr	Gly
				165					170					175	
Asn	Pro	Glu	His	Thr	Ser	Gln	Lys	Gly	Asn	Pro	Pro	Leu	Asn	His	Leu
			180					185					190		

<210> 40

<211> 94  
 <212> PRT  
 <213> Human herpesvirus 1

<220>  
 <223> Herpes simplex virus type 1 (HSV-1) glycoprotein  
 G, US4

<400> 40  
 Thr Pro Pro Met Pro Ser Ile Gly Leu Glu Glu Glu Glu Glu Glu Glu  
 1 5 10 15  
 Gly Ala Gly Asp Gly Glu His Leu Glu Gly Gly Asp Gly Thr Arg Asp  
 20 25 30  
 Thr Leu Pro Gln Ser Pro Gly Pro Ala Phe Pro Leu Ala Glu Asp Val  
 35 40 45  
 Glu Lys Asp Lys Pro Asn Arg Pro Val Val Pro Ser Pro Asp Pro Asn  
 50 55 60  
 Asn Ser Pro Ala Arg Pro Glu Thr Ser Arg Pro Lys Thr Pro Pro Thr  
 65 70 75 80  
 Ile Ile Gly Pro Leu Ala Thr Arg Pro Thr Thr Arg Leu Thr  
 85 90

<210> 41  
 <211> 14  
 <212> PRT  
 <213> Human herpesvirus 1

<220>  
 <223> Herpes simplex virus type 1 (HSV-1) immediate early  
 protein infected cell protein 47 (ICP47),  
 immediate-early protein IE12, Vmw12, immediate-early-5,  
 US12, TAP transporter inhibitor ICP47

<400> 41  
 Met Ser Trp Ala Leu Glu Met Ala Asp Thr Phe Leu Asp Thr  
 1 5 10

<210> 42  
 <211> 261  
 <212> PRT  
 <213> Human herpesvirus 2

<220>  
 <223> Herpes simplex virus type 2 (HSV-2) neurovirulence  
 factor infected cell protein 34.5 (ICP34.5), RL1  
 ORF

<400> 42  
 Met Ser Arg Arg Arg Gly Pro Arg Arg Arg Gly Pro Arg Arg Arg Pro  
 1 5 10 15  
 Arg Pro Gly Ala Pro Ala Val Pro Arg Pro Gly Ala Pro Ala Val Pro  
 20 25 30

Arg	Pro	Gly	Ala	Leu	Pro	Thr	Ala	Asp	Ser	Gln	Met	Val	Pro	Ala	Tyr
		35					40					45			
Asp	Ser	Gly	Thr	Ala	Val	Glu	Ser	Ala	Pro	Ala	Ala	Ser	Ser	Leu	Leu
	50					55					60				
Arg	Arg	Trp	Leu	Leu	Val	Pro	Gln	Ala	Asp	Asp	Ser	Asp	Asp	Ala	Asp
65					70					75					80
Tyr	Ala	Gly	Asn	Asp	Asp	Ala	Glu	Trp	Ala	Asn	Ser	Pro	Pro	Ser	Glu
			85						90					95	
Gly	Gly	Gly	Lys	Ala	Pro	Glu	Ala	Pro	His	Ala	Ala	Pro	Ala	Ala	Ala
			100					105					110		
Cys	Pro	Pro	Pro	Pro	Pro	Arg	Lys	Glu	Arg	Gly	Pro	Gln	Arg	Pro	Leu
		115					120					125			
Pro	Pro	His	Leu	Ala	Leu	Arg	Leu	Arg	Thr	Thr	Thr	Glu	Tyr	Leu	Ala
		130				135						140			
Arg	Leu	Ser	Leu	Arg	Arg	Arg	Arg	Pro	Pro	Ala	Ser	Pro	Pro	Ala	Asp
145				150						155					160
Ala	Pro	Arg	Gly	Lys	Val	Cys	Phe	Ser	Pro	Arg	Val	Gln	Val	Arg	His
				165					170					175	
Leu	Val	Ala	Trp	Glu	Thr	Ala	Ala	Arg	Leu	Ala	Arg	Arg	Gly	Ser	Trp
			180					185					190		
Ala	Arg	Glu	Arg	Ala	Asp	Arg	Asp	Arg	Phe	Arg	Arg	Arg	Val	Ala	Ala
		195					200					205			
Ala	Glu	Ala	Val	Ile	Gly	Pro	Cys	Leu	Glu	Pro	Glu	Ala	Arg	Ala	Arg
	210					215					220				
Ala	Arg	Ala	Arg	Ala	Arg	Ala	His	Glu	Asp	Gly	Gly	Pro	Ala	Glu	Glu
225				230						235					240
Glu	Glu	Ala	Ala	Ala	Ala	Ala	Arg	Gly	Ser	Ser	Ala	Ala	Ala	Gly	Pro
				245					250					255	
Gly	Arg	Arg	Ala	Val											
			260												

<210> 43

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> melanocyte lineage-specific antigen gp100 second  
epitope for agonists

<400> 43

Phe Leu Asp Gln Val Ala Phe Ser Val

1

5

<210> 44

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> melanocyte lineage-specific antigen gp100 second  
epitope for agonists



<400> 44  
Phe Leu Asp Gln Arg Val Phe Val Val  
1 5

<210> 45  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> melanocyte lineage-specific antigen gp100 second  
epitope for agonists

<400> 45  
Phe Leu Phe Leu Trp Phe Phe Glu Val  
1 5

<210> 46  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> tyrosinase-related protein-2 (TRP-2) alternate  
epitope

<400> 46  
Leu Leu Pro Gly Gly Arg Pro Tyr Arg  
1 5

<210> 47  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> tyrosinase-related protein-2 (TRP-2) alternate  
epitope

<400> 47  
Ser Val Tyr Asp Phe Phe Val Trp Leu  
1 5

<210> 48  
<211> 24  
<212> PRT  
<213> Artificial Sequence

<220>

<223> human IgG1 backbone Leader and Flanking sequence

<220>

<221> PEPTIDE

<222> (1)...(19)

<223> Leader sequence

<220>

<221> PEPTIDE

<222> (20)...(24)

<223> Flanking sequence

<400> 48

Met	Lys	His	Leu	Trp	Phe	Phe	Leu	Leu	Leu	Val	Ala	Ala	Pro	Arg	Trp
1				5					10					15	
Val	Leu	Ser	Gln	Val	Gln	Leu	Gln								
			20												

<210> 49

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> Poly-Gly Linker

<400> 49

Gly	Gly	Gly	Gly	Gly
1				5

<210> 50

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> MHC class I-restricted OVA antigen peptide

<400> 50

Ser	Ile	Ile	Asn	Phe	Glu	Lys	Leu
1				5			